for the degree of Bachelor of Science in Civil Engineering

department website: Department of Civil & Environmental Engineering (https://cee.illinois.edu)
department faculty: Department of Civil & Environmental Engineering Faculty (https://cee.illinois.edu/directory/faculty)
overview of college admissions & requirements: The Grainger College of Engineering (https://grainger.illinois.edu/admissions)
college website: https://grainger.illinois.edu/

Civil engineering is a profession that applies the basic principles of science in conjunction with mathematical and computational tools to solve problems associated with developing and sustaining civilized life on our planet. Civil engineering works are generally one-of-a-kind projects; they are often grand in scale; and they usually require cooperation among professionals of many different disciplines. The completion of a civil engineering project involves the solution of technical problems in which uncertainty of information and myriad non-technical factors often play a significant role. Some of the most common examples of civil engineering works include bridges, buildings, dams, airports, highways, tunnels, and water distribution systems. Civil engineers are concerned with flood control, landslides, air and water pollution, and the design of facilities to withstand earthquakes and other natural hazards, in addition to protecting our environment for a sustainable future.

The civil engineering program comprises seven areas (construction engineering and management, construction materials engineering, environmental engineering, geotechnical engineering, environmental hydrology and hydraulics, structural engineering, and transportation engineering) and three interdisciplinary programs (sustainable and resilient infrastructure systems; energy, water, and environmental sustainability; and societal risk and hazard mitigation). Although each area has its own special body of knowledge and engineering tools, they all rely on the same fundamental core principles. Civil engineering programs often draw expertise from many of these areas and programs.

CEE’s Program Education Objectives are to educate CEE students to:

1. Successfully enter the civil and environmental engineering profession as practicing engineers and consultants with prominent companies and organizations in diverse areas that include structural, transportation, geotechnical, materials, environmental, and hydrologic engineering; construction management; or other related or emerging fields.
2. Pursue graduate education and research at major research universities in civil and environmental engineering, and related fields.
3. Pursue professional licensure.
4. Advance to leadership positions in the profession.
5. Engage in continued learning through professional development.
6. Participate in and contribute to professional societies and community services.

Program Review and Approval

To qualify for the degree of Bachelor of Science in Civil Engineering, each student’s academic program plan must be reviewed by a standing committee of the faculty (the Program Review Committee) and approved by the Associate Head of Civil and Environmental Engineering in charge of undergraduate programs. This review and approval process ensures that individual programs satisfy the educational objectives and all of the requirements of the civil engineering program, that those programs do not abuse the substantial degree of flexibility that is present in the curriculum, and that the career interests of each student are cultivated and served.

for the degree of Bachelor of Science in Civil Engineering

Graduation Requirements

Minimum Overall GPA: 2.0
Minimum hours required for graduation: 128 hours
General education: Students must complete the Campus General Education (https://courses.illinois.edu/gened/DEFAULT/DEFAULT) requirements including the campus general education language requirement. One of the SBS courses must be an introductory economics course (ECON 102 or ECON 103). The Advanced Composition course must be BTW 261.

Orientation and Professional Development

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<td>About Civil Engineering</td>
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<tr>
<td>CEE 495</td>
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<td>ENG 100</td>
<td>Engineering Orientation¹</td>
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Foundational Mathematics and Science

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<tr>
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<td>CHEM 104</td>
<td>General Chemistry II</td>
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<td>CHEM 105</td>
<td>General Chemistry Lab II</td>
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<td>MATH 221</td>
<td>Calculus I²</td>
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<td>MATH 225</td>
<td>Introductory Matrix Theory</td>
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<td>MATH 231</td>
<td>Calculus II</td>
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<td>MATH 241</td>
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<td>MATH 285</td>
<td>Intro Differential Equations</td>
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<tr>
<td>PHYS 211</td>
<td>University Physics: Mechanics</td>
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<tr>
<td>PHYS 212</td>
<td>University Physics: Elec &amp; Mag</td>
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Civil Engineering Technical Core

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<tr>
<td>CEE 201</td>
<td>Systems Engrg &amp; Economics</td>
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<td>CEE 202</td>
<td>Engineering Risk &amp; Uncertainty</td>
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<td>CS 101</td>
<td>Intro Computing: Engrg &amp; Sci</td>
<td>3</td>
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<tr>
<td>SE 101</td>
<td>Engineering Graphics &amp; Design</td>
<td>3</td>
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<tr>
<td>TAM 211</td>
<td>Statics</td>
<td>3</td>
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<td>TAM 212</td>
<td>Introductory Dynamics</td>
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<td>TAM 251</td>
<td>Introductory Solid Mechanics</td>
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<td>TAM 335</td>
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Science Elective

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<td>Science elective, selected in accord with recommendations for the chosen primary field in civil engineering</td>
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Civil Engineering Technical Electives

Students choose primary and secondary fields, of which there are seven traditional areas of study and three interdisciplinary programs. The specific choices of courses in this category are made through the submission of a Plan of Study, which is subject to approval by the faculty Program Review Committee.

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<td>CEE 320</td>
<td>Construction Engineering</td>
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<tr>
<td>CEE 360</td>
<td>Structural Engineering</td>
<td>3</td>
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<tr>
<td>CEE 380</td>
<td>Geotechnical Engineering</td>
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<td>CEE 420</td>
<td>Construction Productivity</td>
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<td>CEE 421</td>
<td>Construction Planning (Required Integrated Design Course)</td>
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<td>CEE 422</td>
<td>Construction Cost Analysis</td>
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<tr>
<td>CEE 461</td>
<td>Reinforced Concrete I</td>
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<tr>
<td>CEE 401</td>
<td>Concrete Materials</td>
<td>4</td>
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<tr>
<td>CEE 424</td>
<td>Sustainable Const Methods</td>
<td>4</td>
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<tr>
<td>CEE 460</td>
<td>Steel Structures I</td>
<td>3</td>
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<tr>
<td>CEE 469</td>
<td>Wood Structures</td>
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<tr>
<td>CEE 480</td>
<td>Foundation Engineering</td>
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Construction Materials Engineering

Science Electives Required - None

Science Electives Recommended:

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<td>GEOL 107</td>
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<td>ME 430</td>
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<td>MSE 201</td>
<td>Phases and Phase Relations</td>
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<td>TAM 427</td>
<td>Mechanics of Polymers</td>
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<td>TAM 428</td>
<td>Mechanics of Composites</td>
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<td>Behavior of Materials</td>
<td>4</td>
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<tr>
<td>CEE 310</td>
<td>Transportation Engineering</td>
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<tr>
<td>CEE 310</td>
<td>Transportation Engineering</td>
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<td>CEE 360</td>
<td>Structural Engineering</td>
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<td>CEE 380</td>
<td>Geotechnical Engineering</td>
<td>3</td>
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<td>CEE 401</td>
<td>Concrete Materials (Required Integrated Design Course)</td>
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<td>CEE 405</td>
<td>Asphalt Materials I</td>
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<td>CEE 406</td>
<td>Pavement Design I</td>
<td>3 or 4</td>
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<td>CEE 460</td>
<td>Steel Structures I</td>
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<td>CEE 461</td>
<td>Reinforced Concrete I</td>
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<td>CEE 469</td>
<td>Wood Structures</td>
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<tr>
<td>CEE 483</td>
<td>Soil Mechanics and Behavior</td>
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<td>MSE 401</td>
<td>Thermodynamics of Materials</td>
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<td>MSE 402</td>
<td>Kinetic Processes in Materials</td>
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<td>MSE 406</td>
<td>Thermal-Mech Behavior of Matls</td>
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<td>MSE 420</td>
<td>Ceramic Materials &amp; Properties</td>
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<tr>
<td>MSE 450</td>
<td>Polymer Science &amp; Engineering</td>
<td>3 or 4</td>
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Environmental Engineering

Science Electives Required - None

Science Electives Recommended:

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<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tr>
<td>CHEM 222</td>
<td>Quantitative Analysis Lecture</td>
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<td>CHEM 232</td>
<td>Elementary Organic Chemistry I</td>
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<tr>
<td>CS 357</td>
<td>Numerical Methods I</td>
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</table>

Information listed in this catalog is current as of 07/2020
Advanced Technical Courses Required:
CEE 450  Groundwater 3
CEE 460  Steel Structures I 3
CEE 461  Reinforced Concrete I 3
CEE 463  Reinforced Concrete II 3 or 4

Structural Engineering
Science Electives Required - None
Science Electives Recommended:
CS 357  Numerical Methods I 3
ECE 205  Electrical and Electronic Circuits 3
GEOL 107  Physical Geology 4
GEOL 118  Natural Disasters 3
ME 200  Thermodynamics 3
Civil Engineering Core Courses:
CEE 300  Behavior of Materials 4
CEE 360  Structural Engineering 3
CEE 380  Geotechnical Engineering 3

Advanced Technical Courses Required - None
Transportation Engineering
Science Electives Required - None
Science Electives Recommended:
CS 357  Numerical Methods I 3
ECE 205  Electrical and Electronic Circuits 3
GEOL 107  Physical Geology 4
GEOL 118  Natural Disasters 3
ME 200  Thermodynamics 3
Civil Engineering Core Courses:
CEE 300  Behavior of Materials 4
CEE 310  Transportation Engineering 3
CEE 320  Construction Engineering 3
CEE 330  Environmental Engineering 3
CEE 335  Water Resources Engineering 3
CEE 360  Structural Engineering 3
CEE 380  Geotechnical Engineering 3

Advanced Technical Courses: You must select one course from each of the three Areas below and one course from the recommended list.

Area 1 - Facilities
CEE 405  Asphalt Materials I 3 or 4
CEE 406  Pavement Design I 3 or 4
CEE 407  Airport Design 3 or 4

Information listed in this catalog is current as of 07/2020
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<table>
<thead>
<tr>
<th>Area 2 - Systems:</th>
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<tr>
<td>CEE 407</td>
<td>Airport Design</td>
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<tr>
<td>CEE 415</td>
<td>Geometric Design of Roads (Required Integrated Design Course)</td>
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<tr>
<td>CEE 416</td>
<td>Traffic Capacity Analysis</td>
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<tr>
<td>CEE 418</td>
<td>Public Transportation Systems</td>
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<table>
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<th>Area 3 - Railroad:</th>
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<td>CEE 408</td>
<td>Railroad Transportation Engr</td>
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<tr>
<td>CEE 409</td>
<td>Railroad Track Engineering</td>
</tr>
<tr>
<td>CEE 410</td>
<td>Railway Signaling &amp; Control</td>
</tr>
<tr>
<td>CEE 411</td>
<td>RR Project Design &amp; Constr</td>
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</table>

**Recommended:**
- CEE 401 Concrete Materials
- CEE 405 Asphalt Materials I
- CEE 406 Pavement Design I
- CEE 407 Airport Design
- CEE 408 Railroad Transportation Engr
- CEE 409 Railroad Track Engineering
- CEE 410 Railway Signaling & Control
- CEE 411 RR Project Design & Constr
- CEE 412 High-Speed Rail Engineering
- CEE 415 Geometric Design of Roads
- CEE 416 Traffic Capacity Analysis
- CEE 417 Urban Transportation Planning
- CEE 418 Public Transportation Systems

**Water Resources Engineering and Science**

**Science Electives Required - None**

**Science Electives Recommended:**
- CS 357 Numerical Methods I
- GEOL 107 Physical Geology
- ME 200 Thermodynamics

**Civil Engineering Core Courses Required:**
- CEE 350 Water Resources Engineering

**Civil Engineering Core Courses Recommended:**
- CEE 300 Behavior of Materials
- CEE 320 Construction Engineering
- CEE 330 Environmental Engineering
- CEE 360 Geotechnical Engineering
- CEE 380 Geotechnical Engineering

**Advanced Technical Courses Required (Choose one):**
- CEE 452 Hydraulic Analysis and Design
- CEE 453 Urban Hydrology and Hydraulics (Required Integrated Design Course)

**Advanced Technical Courses Recommended:**
- CEE 432 Stream Ecology
- CEE 433 Water Technology and Policy
- CEE 434 Environmental Systems I
- CEE 437 Water Quality Engineering
- CEE 450 Surface Hydrology
- CEE 451 Environmental Fluid Mechanics
- CEE 452 Hydraulic Analysis and Design
- CEE 453 Urban Hydrology and Hydraulics

**CEE 457** Groundwater

**CEE 458** Water Resources Field Methods

**CEE 498** Special Topics (Section EH) 1 to 4

**Energy-Water-Environment Sustainability**

**Science Electives Required:**
- ME 200 Thermodynamics
- or CHBE 321Thermodynamics

**Science Electives Required - None**

**Civil Engineering Core Courses Required:**
- CEE 340 Energy and Global Environment

**Civil Engineering Core Courses Recommended:**
- CEE 330 Environmental Engineering
- CEE 350 Water Resources Engineering

**Advanced Technical Courses Required:**
- CEE 493 Sustainable Design Eng Tech (Must also select 3 courses from recommended list below) 4

**Advanced Technical Courses Recommended:**
- ABE 436 Renewable Energy Systems
- ARCH 441 Heat and Moisture in Buildings
- CEE 424 Sustainable Const Methods
- CEE 433 Water Technology and Policy
- CEE 434 Environmental Systems I
- CEE 437 Water Quality Engineering
- CEE 446 Air Quality Engineering
- CEE 449 Environmental Engineering Lab
- CEE 450 Surface Hydrology
- CEE 452 Hydraulic Analysis and Design
- CEE 453 Urban Hydrology and Hydraulics
- CEE 457 Groundwater
- CEE 498 Special Topics (Section EH)
- ENG 471 Seminar Energy & Sustain Engrg
- ME 400 Energy Conversion Systems
- NPRE 402 Nuclear Power Engineering
- NPRE 475 Wind Power Systems

**Societal Risk and Hazard Mitigation**

**Science Electives Required - None**

**Science Electives Recommended:**
- FIN 230 Introduction to Insurance
- GEOL 118 Natural Disasters
- LAW 301 Introduction to Law
- NRES 287 Environment and Society
- STAT 420 Methods of Applied Statistics

**Civil Engineering Core Courses Required:**
- CEE 340 Energy and Global Environment

**Civil Engineering Core Courses Recommended:**
- CEE 300 Behavior of Materials
- CEE 310 Transportation Engineering
- CEE 320 Construction Engineering
- CEE 330 Environmental Engineering
- CEE 350 Water Resources Engineering
- CEE 360 Structural Engineering
- CEE 380 Geotechnical Engineering
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<td>CEE 437</td>
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<tr>
<td>CEE 330</td>
<td>Environmental Engineering</td>
<td>3</td>
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<tr>
<td>CEE 340</td>
<td>Energy and Global Environment</td>
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<td>Water Resources Field Methods</td>
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<td>3 or 4</td>
</tr>
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<tr>
<td>UP 480</td>
<td>Sustainable Design Principles</td>
<td>2</td>
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Information listed in this catalog is current as of 07/2020
CEE 483  Soil Mechanics and Behavior  4
Materials:
CEE 401  Concrete Materials  4
Structures:
CEE 460  Steel Structures I  3
CEE 461  Reinforced Concrete I  3
Transportation:
CEE 405  Asphalt Materials I  3 or 4
CEE 406  Pavement Design I  3 or 4
CEE 407  Airport Design  3 or 4
CEE 408  Railroad Transportation Engrg  3 or 4
CEE 409  Railroad Track Engineering  3 or 4
CEE 410  Railway Signaling & Control  3 or 4
CEE 411  RR Project Design & Constr  3 or 4
CEE 412  High-Speed Rail Engineering  3 or 4
CEE 415  Geometric Design of Roads  4
CEE 416  Traffic Capacity Analysis  3 or 4
CEE 417  Urban Transportation Planning  4
CEE 418  Public Transportation Systems  3 or 4
Water Resources:
CEE 452  Hydraulic Analysis and Design  3
CEE 453  Urban Hydrology and Hydraulics  4

Secondary Field Advanced Technical Electives. Select courses from approved lists to complement the primary area and add breadth to the program of study. See list below:

Construction Engineering and Management
Civil Engineering Core Courses Required:
CEE 320  Construction Engineering  3
Advanced Technical Courses Required:
CEE 421  Construction Planning  3 or 4
CEE 420  Construction Productivity  3 or 4
or CEE 422  Construction Cost Analysis  3 or 4
Advanced Technical Courses Recommended:
CEE 424  Sustainable Const Methods  4

Construction Materials Engineering
Civil Engineering Core Courses Required:
CEE 300  Behavior of Materials  4
Advanced Technical Courses Required - Pick 2 courses from the recommended list below.
Advanced Technical Courses Recommended:
CEE 401  Concrete Materials  4
CEE 405  Asphalt Materials I  3 or 4
CEE 406  Pavement Design I  3 or 4

Environmental Engineering
Civil Engineering Core Courses Required:
CEE 330  Environmental Engineering  3
Advanced Technical Courses Required - Choose 2 courses from the recommended list below.
CEE 430  Ecological Quality Engineering  2
CEE 434  Environmental Systems I  3
CEE 437  Water Quality Engineering  3
CEE 438  Science & Environmental Policy  3
CEE 445  Air Quality Modeling  4
CEE 442  Environmental Engineering Principles, Physical  4
CEE 443  Env Eng Principles, Chemical  4
CEE 444  Env Eng Principles, Biological  4
CEE 446  Air Quality Engineering  4
CEE 447  Atmospheric Chemistry  4
CEE 449  Environmental Engineering Lab  3

Geotechnical Engineering
Civil Engineering Core Courses Required:
CEE 380  Geotechnical Engineering  3
Advanced Technical Courses Required:
CEE 480  Foundation Engineering  3 or 4
or CEE 484  Applied Soil Mechanics  3
CEE 483  Soil Mechanics and Behavior  4
Advanced Technical Courses Recommended - NONE

Structural Engineering
Civil Engineering Core Courses Required:
CEE 360  Structural Engineering  3
Advanced Technical Courses Required:
CEE 460  Steel Structures I  3
CEE 461  Reinforced Concrete I  3

Transportation Engineering
Civil Engineering Core Courses Required:
CEE 310  Transportation Engineering  3
Advanced Technical Courses Required: Select 2 courses, each from a different Area
Area 1 - Facilities:
CEE 405  Asphalt Materials I  3 or 4
CEE 406  Pavement Design I  3 or 4
CEE 407  Airport Design  3 or 4
Area 2 - Systems:
CEE 407  Airport Design  3 or 4
CEE 415  Geometric Design of Roads  4
CEE 416  Traffic Capacity Analysis  3 or 4
CEE 418  Public Transportation Systems  3 or 4
Area 3 - Railroad:
CEE 408  Railroad Transportation Engrg  3 or 4
CEE 409  Railroad Track Engineering  3 or 4
CEE 410  Railway Signaling & Control  3 or 4
CEE 411  RR Project Design & Constr  3 or 4

Water Resources Engineering and Science
Civil Engineering Core Courses Required:
CEE 350  Water Resources Engineering  3
Advanced Technical Courses Required: 2 courses from the recommended list below:
Advanced Technical Courses Recommended:
CEE 432  Stream Ecology  3 or 4
CEE 433  Water Technology and Policy  3 or 4
CEE 450  Surface Hydrology  3
CEE 451  Environmental Fluid Mechanics  3
CEE 452  Hydraulic Analysis and Design  3
CEE 453  Urban Hydrology and Hydraulics  4
CEE 457  Groundwater  3

Information listed in this catalog is current as of 07/2020
Civil Engineering Core Courses Required:

- CEE 458 Water Resources Field Methods 4
- CEE 498 Special Topics (Section EH) 1 to 4

Energy-Water-Environment Sustainability

Civil Engineering Core Courses Required:

- CEE 340 Energy and Global Environment 3

Advanced Technical Courses Required:

- CEE 493 Sustainable Design Eng Tech (and select one course from the recommended list below) 4

Advanced Technical Courses Recommended:

- ABE 436 Renewable Energy Systems 3 or 4
- ARCH 441 Heat and Moisture in Buildings 3
- CEE 424 Sustainable Const Methods 4
- CEE 433 Water Technology and Policy 3 or 4
- CEE 434 Environmental Systems I 3
- CEE 437 Water Quality Engineering 3
- CEE 446 Air Quality Engineering 4
- CEE 449 Environmental Engineering Lab 3
- CEE 450 Surface Hydrology 3
- CEE 452 Hydraulic Analysis and Design 3
- CEE 453 Urban Hydrology and Hydraulics 4
- CEE 457 Groundwater 3
- CEE 498 Special Topics (Section EH) 1 to 4
- ENG 471 Seminar Energy & Sustain Engrg 1
- ME 400 Energy Conversion Systems 3 or 4
- NPRE 402 Nuclear Power Engineering 3 or 4
- NPRE 475 Wind Power Systems 3 or 4

Societal Risk and Hazard Mitigation

Civil Engineering Core Courses Required - None

Advanced Technical Courses Required:

- CEE 491 Decision and Risk Analysis (and select one from the recommended list below) 3 or 4

Advanced Technical Courses Recommended:

- CEE 406 Pavement Design I 3 or 4
- CEE 416 Traffic Capacity Analysis 3 or 4
- CEE 417 Urban Transportation Planning 4
- CEE 437 Water Quality Engineering 3
- CEE 440 Fate Cleanup Environ Pollutant 4
- CEE 449 Environmental Engineering Lab 3
- CEE 460 Steel Structures I 3
- CEE 461 Reinforced Concrete I 3
- CEE 465 Design of Structural Systems 3
- CEE 472 Structural Dynamics I 3 or 4
- CEE 498 Special Topics (Section EH) 1 to 4
- IE 410 Advanced Topics in Stochastic Processes & Applications 3 or 4
- NPRE 442 Radioactive Waste Management 3
- SE 450 Decision Analysis I 3 or 4
- STAT 425 Applied Regression and Design 3 or 4
- STAT 429 Time Series Analysis 3 or 4
- STAT 430 Topics in Applied Statistics 3 or 4
- UP 438 Disasters and Urban Planning 4

Sustainable and Resilient Infrastructure Systems

Civil Engineering Core Courses Required:

- CEE 340 Energy and Global Environment 3

Civil Engineering Core Courses Recommended:

- CEE 300 Behavior of Materials 4
- CEE 310 Transportation Engineering 3
- CEE 320 Construction Engineering 3
- CEE 330 Environmental Engineering 3
- CEE 350 Water Resources Engineering 3
- CEE 380 Geotechnical Engineering 3

Advanced Technical Courses Required:

- CEE 491 Decision and Risk Analysis (And select one course from the recommended list below) 3 or 4

Advanced Technical Courses Recommended:

- ABE 436 Renewable Energy Systems 3 or 4
- CEE 401 Concrete Materials 4
- CEE 406 Pavement Design I 3 or 4
- CEE 408 Railroad Transportation Engrg 3 or 4
- CEE 409 Railroad Track Engineering 3 or 4
- CEE 416 Traffic Capacity Analysis 3 or 4
- CEE 417 Urban Transportation Planning 4
- CEE 418 Public Transportation Systems 3 or 4
- CEE 421 Construction Planning 3 or 4
- CEE 424 Sustainable Const Methods 4
- CEE 434 Environmental Systems I 3
- CEE 435 Urban Hydrology and Hydraulics 4
- CEE 458 Water Resources Field Methods 4
- CEE 465 Design of Structural Systems 3
- CEE 493 Sustainable Design Eng Tech 4
- CEE 498 Special Topics (Section PS) 1 to 4
- MSE 489 Matl Select for Sustainability 3 or 4
- UP 466 Energy & the Built Environment 4
- UP 480 Sustainable Design Principles 2

Global Context

Science Electives Recommended:

- CPSC 116 The Global Food Production Web 3
- ESE 140 Climate and Global Change 3
- ESE 320 Water Planet, Water Crisis 3
- ESE 482 Challenges of Sustainability 3

Civil Engineering Core Courses Recommended:

- CEE 330 Environmental Engineering 3
- or CEE 350 Water Resources Engineering
- CEE 340 Energy and Global Environment 3

Advanced Technical Courses Recommended: Must take at least 3 credit hours in each of the 2 areas below:

Knowledge and Skills Needed to Effectively Address Global Issues:

- ACE 451 Agriculture in Intl Dev 3 to 4
- ATMS 421 Earth Systems Modeling 4
- CEE 438 Science & Environmental Policy 3
- CEE 445 Air Quality Modeling 4
- CEE 447 Atmospheric Chemistry 4
- CEE 450 Surface Hydrology 3
- ECON 420 International Economics 2 to 4

Global CEE Design:

Information listed in this catalog is current as of 07/2020.
Civil Engineering Core Courses Required:

- Toxicology (Primary Field: Environmental Engineering)
  - CEE 444
  - MCB 450
  - MCB 431
  - MCB 301
  - CEE 465

Advanced Technical Courses Recommended:

- CEE 330
- CEE 350

Civil Engineering Core Courses Required:

- Microbiology (Primary Field: Environmental Engineering)
  - CHBE 424
  - CHBE 422
  - CHBE 421
  - CHBE 321

Advanced Technical Courses Recommended:

- CEE 330

Civil Engineering Core Courses Required:

- Engineering (Primary Field: Environmental Engineering)
  - CHEM 440
  - CHEM 420
  - CHEM 332
  - CHEM 315
  - CHEM 232

Advanced Technical Courses Recommended:

- CEE 330

Civil Engineering Core Courses Required:

- Chemistry (Primary Field: Environmental Engineering)
  - CEE 447
  - CEE 449
  - ATMS 421
  - ATMS 411
  - ATMS 410
  - ATMS 302

Advanced Technical Courses Recommended:

- CEE 330

Atmosphere Science (Primary Field: Environmental Engineering)

Civil Engineering Core Courses Required:

- CEE 330

Advanced Technical Courses Recommended:

- ATMS 302
- ATMS 410
- ATMS 411
- ATMS 421
- CEE 445
- CEE 447

Chemistry (Primary Field: Environmental Engineering)

Civil Engineering Core Courses Required:

- CEE 330

Advanced Technical Courses Recommended:

- CHEM 232
- CHEM 315
- CHEM 332
- CHEM 420
- CHEM 440

Chemical Engineering (Primary Field: Environmental Engineering)

Civil Engineering Core Courses Required:

- CEE 330
- CEE 350

Advanced Technical Courses Recommended:

- CHBE 321
- CHBE 421
- CHBE 422
- CHBE 424

Microbiology (Primary Field: Environmental Engineering)

Civil Engineering Core Courses Required:

- CEE 330

Advanced Technical Courses Recommended:

- MCB 301
- MCB 431
- MCB 450
- CEE 444

Toxicology (Primary Field: Environmental Engineering)

Civil Engineering Core Courses Required:

- CEE 330

Advanced Technical Courses Recommended:

- CHEM 332
- ENVS 431
- ENVS 480
- MCB 450

Electives

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<thead>
<tr>
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<th>Hours</th>
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<tr>
<td>CEE 330</td>
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<tr>
<td>CHEM 332</td>
<td>Elementary Organic Chem II</td>
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<td>ENVS 431</td>
<td>Environ Toxicology &amp; Health</td>
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<td>ENVS 480</td>
<td>Basic Toxicology</td>
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<tr>
<td>MCB 450</td>
<td>Introductory Biochemistry</td>
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</table>

Free electives. Additional unrestricted course work, subject to certain exceptions as noted by the College, so that there are at least 128 credit hours earned toward the degree.

Total Hours of Curriculum to Graduate: 128

1. External transfer students take ENG 300 instead.
2. MATH 220 may be substituted, with four of the five credit hours applying toward the degree. MATH 220 is appropriate for students with no background in calculus.
3. The Grainger College of Engineering approved liberal education course list can be found here (https://wiki.illinois.edu/wiki/display/ugadvise/Degree+Requirements/#DegreeRequirements-GeneralEducationElectives). Note that these credit hours could carry the required cultural studies designation required for campus general education requirements.
4. The Grainger College of Engineering restrictions to free electives can be found here (https://wiki.illinois.edu/wiki/display/ugadvise/Degree+Requirements/#DegreeRequirements-FreeElectives).

Suggested Sequence

The curriculum sequence below is a suggested sequence, as all Grainger Engineering students work with a department academic advisor to achieve their educational goals, specific to their needs and preparation. Dynamic and Static curricular maps, which include prerequisite sequencing, can be found here (https://grainger.illinois.edu/academics/undergraduate/majors-and-minors/cee-map).

**First Year**

<table>
<thead>
<tr>
<th>First Semester</th>
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<tbody>
<tr>
<td>CEE 195¹ About Civil Engineering</td>
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<tr>
<td>ENG 100 Engineering Orientation</td>
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<tr>
<td>MATH 221 Calculus I</td>
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<tr>
<td>CHEM 102 General Chemistry I</td>
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</tr>
<tr>
<td>CHEM 103 General Chemistry Lab I</td>
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<tr>
<td>RHET 105 Writing and Research or SE 101³</td>
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Semester Hours: 16-15

**Second Semester**

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<tbody>
<tr>
<td>MATH 231 Calculus II</td>
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<tr>
<td>CHEM 104 General Chemistry II</td>
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<tr>
<td>CHEM 105 General Chemistry Lab II</td>
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</table>

Note: ¹External transfer students take ENG 300 instead.
³MATH 220 may be substituted, with four of the five credit hours applying toward the degree.
⁴The Grainger College of Engineering approved liberal education course list can be found here (https://wiki.illinois.edu/wiki/display/ugadvise/Degree+Requirements/#DegreeRequirements-GeneralEducationElectives). Note that these credit hours could carry the required cultural studies designation required for campus general education requirements.
⁵The Grainger College of Engineering restrictions to free electives can be found here (https://wiki.illinois.edu/wiki/display/ugadvise/Degree+Requirements/#DegreeRequirements-FreeElectives).

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<td>PHYS 211</td>
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<td>CS 101</td>
<td>Intro Computing: Engrg Sci</td>
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<td>SE 101</td>
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### Semester Hours

17-18

#### Second Year

**First Semester**

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<td>MATH 241</td>
<td>Calculus III</td>
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<td>PHYS 212</td>
<td>University Physics: Elec Mag</td>
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<td>TAM 211</td>
<td>Statics</td>
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<td>MATH 225</td>
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### Semester Hours

16

**Second Semester**

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<td>PHYS 213</td>
<td>Univ Physics: Thermal Physics</td>
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<td>TAM 212</td>
<td>Introductory Dynamics</td>
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<td>Introductory Solid Mechanics</td>
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### Semester Hours

17

#### Third Year

**First Semester**

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<td>Introductory Fluid Mechanics</td>
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### Semester Hours

16

**Second Semester**

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### Semester Hours

16

#### Fourth Year

**First Semester**

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<tr>
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### Semester Hours

15

**Second Semester**

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</table>

### Semester Hours

15

### Total Hours

128

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1. Offered in the fall semester; student should take in the first or second semester of enrollment in Civil Engineering.

2. MATH 220 may be substituted, with four of the five credit hours applying toward the degree. MATH 220 is appropriate for students with no background in calculus.

3. RHET 105 (or an alternative Composition I sequence) is taken either in the first or second semester of the first year, according to the student’s UIN (Spring if your UIN is Odd). SE 101 is taken the other semester. Composition I guidelines can be found at [http://catalog.illinois.edu/general-information/degree-general-education-requirements/](http://catalog.illinois.edu/general-information/degree-general-education-requirements/) under Written Communication Requirement.

4. Students must take 6 hours from the campus General Education Social and Behavioral Sciences list, 6 hours from campus General Education Humanities and the Arts list, and 6 hours from a liberal education list approved by the college or from the campus General Education lists for Social and Behavioral Sciences or Humanities and the Arts. ECON 102 or ECON 103 must be one of the Social and Behavioral Sciences courses. Students must also complete the campus cultural studies requirement by completing (i) one western/comparative culture(s) course, (ii) one non-western culture(s) course, and (iii) one U.S. Minority Culture(s) course from the General Education cultural studies lists. Most students select general education courses that simultaneously satisfy these cultural studies requirements.

5. Civil engineering technical courses are defined as core courses and advanced technical electives and must total 34 hours of credit. Five courses and a minimum of fifteen hours must be core courses as outlined in the Civil Engineering Undergraduate Handbook. Advanced technical electives are selected to correspond with chosen primary and secondary areas of emphasis in civil engineering as outlined in the Civil Engineering Undergraduate Handbook. A minimum of twelve and six hours must be taken for the primary and secondary areas, respectively.

6. The science elective is selected in accord with recommendations for the chosen primary area of emphasis in civil engineering as outlined in the Civil Engineering Undergraduate Handbook. A minimum of twelve and six hours must be taken for the primary and secondary areas, respectively.