# CIVIL ENGINEERING (BS)

Department Website (https://engineering.nyu.edu/academics/programs/civil-engineering-bs/)

**NYSED:** 8813 **HEGIS:** 0908.00 **CIP:** 14.0801

## Program Description

The Department of Civil and Urban Engineering develops engineering graduates capable of contributing to and advancing the practice of civil engineering and its subdisciplines. Through its research programs, the department strives to be at the forefront in selected areas in the development of new knowledge and applications in civil engineering. Through its educational programs, graduates will be well rounded in state-of-the-art techniques and will develop the skills needed in a complex profession. Among these skills are the abilities to communicate effectively and to understand the context of civil engineering projects in a complex society.

## Admissions

New York University's Office of Undergraduate Admissions supports the application process for all undergraduate programs at NYU. For additional information about undergraduate admissions, including application requirements, see How to Apply (https://www.nyu.edu/admissions/undergraduate-admissions/how-to-apply.html).

## Program Requirements

The program requires the completion of 129 credits, comprised of the following:

| Course | Title | Credits |
|---|---|---|
| **Major Requirements** | | |
| *Mathematics* | | |
| MA-UY 1024 | Calculus I for Engineers [1] | 4 |
| MA-UY 1124 | Calculus II for Engineers [1] | 4 |
| MA-UY 2034 | Linear Algebra and Differential Equations [1] | 4 |
| MA-UY 2224 | Data Analysis [1] | 4 |
| *Sciences* | | |
| CM-UY 1003 | General Chemistry for Engineers | 3 |
| CM-UY 1001 | General Chemistry for Engineers Laboratory | 1 |
| PH-UY 1013 | MECHANICS | 3 |
| PH-UY 2121 | General Physics Laboratory I | 1 |
| PH-UY 2023 | ELECTRICITY, MAGNETISM, & FLUIDS | 3 |
| PH-UY 2131 | General Physics Laboratory II | 1 |
| PH-UY 2033 | WAVES, OPTICS, & THERMODYNAMICS | 3 |
| Science Elective [2] | | 3 |
| *General Engineering, Computer Science* | | |
| CS-UY 1113 | PROBLEM SOLVING AND PROGRAMMING I | 3 |
| EG-UY 1004 | Introduction to Engineering and Design | 4 |
| *Humanities and Social Science* | | |
| EXPOS-UA 1 | Writing The Essay: | 4 |
| EXPOS-UA 2 | THE ADVANCED COLLEGE ESSAY | 4 |
| Humanities and Social Sciences Electives [3] | | 16 |
| *Civil Engineering* | | |
| CE-UY 1002 | Introduction to Civil Engineering | 2 |
| CE-UY 2133 | ENGINEERING MECHANICS | 3 |
| CE-UY 2143 | ANALYSIS OF DETERMINATE STRUCTURES | 3 |
| CE-UY 2213 | FLUID MECHANICS AND HYDRAULICS | 3 |
| CE-UY 2343 | Transportation Engineering | 3 |
| CE-UY 2533 | CONSTRUCTION PROJECT MANAGEMENT | 3 |
| CE-UY 3013 | COMPUTING IN CIVIL ENGINEERING | 3 |
| CE-UY 3153 | Geotechnical Engineering | 3 |
| CE-UY 3163 | Materials for the Built Environment | 3 |
| CE-UY 3183 | STRUCTURAL ENGINEERING | 3 |
| CE-UY 3223 | INTRO TO ENVIRONMENTAL ENGINEERING | 3 |
| CE-UY 3243 | WATER RESOURCES ENGINEERING | 3 |
| CE-UY 4092 | Leadership, Business Principles, Policy and Ethics in Civil Engineering | 2 |
| CE-UY 4803 | Civil Engineering Capstone | 3 |
| CE-UY 48X3 | Civil Engineering Concentration Capstone [4] | 3 |
| CE-UY 4990 | Fundamentals of Engineering Exam Registration for CUE | 0 |
| Civil Engineering Electives | | 9 |
| **Electives** | | |
| Free Electives [5] | | 12 |
| **Total Credits** | | **129** |

**1**

Placement in math classes is based on AP credit and/or placement exams administered by the Mathematics Department.

**2**

Students may select a basic science elective from one of the following courses: Introduction to Cell and Molecular Biology, Astronomy and Astrophysics, or Introduction to Geophysics (Geology)

**3**

Students must take sixteen credits (four courses) of elective courses in the humanities and social sciences. Consult the Technology, Culture and Society portion of the bulletin for details. At least one humanities and social sciences elective must be a 3xxx/4xxx level course. At least one humanities and social sciences elective must be a writing-intensive course, labeled by "W."

**4**

A capstone design course associated with an area of concentration (structural engineering, transportation engineering, environmental engineering, urban informatics, or construction management) is required.

**5**

A free elective is any course in any department of the University for which the student has the prerequisites.

See Civil Engineering, BS (http://bulletin.engineering.nyu.edu/preview_program.php?catoid=17&poid=4833&returnto=1374#curriculum) for additional program details.

## Sample Plan of Study

| Course | Title | Credits |
|---|---|---|
| **1st Semester/Term** | | |
| MA-UY 1024 | Calculus I for Engineers | 4 |
| CM-UY 1003 | General Chemistry for Engineers | 3 |
| CM-UY 1001 | General Chemistry for Engineers Laboratory | 1 |
| EXPOS-UA 1 | Writing The Essay: | 4 |

| | | |
|---|---|---|
| EG-UY 1004 | Introduction to Engineering and Design | 4 |
| | **Credits** | **16** |
| **2nd Semester/Term** | | |
| MA-UY 1124 | Calculus II for Engineers | 4 |
| PH-UY 1013 | MECHANICS | 3 |
| EXPOS-UA 2 | THE ADVANCED COLLEGE ESSAY | 4 |
| CS-UY 1113 | PROBLEM SOLVING AND PROGRAMMING I | 3 |
| CE-UY 1002 | Introduction to Civil Engineering | 2 |
| | **Credits** | **16** |
| **3rd Semester/Term** | | |
| MA-UY 2034 | Linear Algebra and Differential Equations | 4 |
| PH-UY 2121 | General Physics Laboratory I | 1 |
| PH-UY 2023 | ELECTRICITY, MAGNETISM, & FLUIDS | 3 |
| Humanities and Social Sciences Elective #1 | | 4 |
| CE-UY 2133 | ENGINEERING MECHANICS | 3 |
| CE-UY 2533 | CONSTRUCTION PROJECT MANAGEMENT | 3 |
| | **Credits** | **18** |
| **4th Semester/Term** | | |
| MA-UY 2224 | Data Analysis | 4 |
| PH-UY 2131 | General Physics Laboratory II | 1 |
| PH-UY 2033 | WAVES, OPTICS, & THERMODYNAMICS | 3 |
| CE-UY 2143 | ANALYSIS OF DETERMINATE STRUCTURES | 3 |
| CE-UY 2213 | FLUID MECHANICS AND HYDRAULICS | 3 |
| CE-UY 2343 | Transportation Engineering | 3 |
| | **Credits** | **17** |
| **5th Semester/Term** | | |
| Humanities and Social Sciences Elective #2 | | 4 |
| CE-UY 3223 | INTRO TO ENVIRONMENTAL ENGINEERING | 3 |
| CE-UY 3183 | STRUCTURAL ENGINEERING | 3 |
| CE-UY 3243 | WATER RESOURCES ENGINEERING | 3 |
| CE-UY 3013 | COMPUTING IN CIVIL ENGINEERING | 3 |
| | **Credits** | **16** |
| **6th Semester/Term** | | |
| Science Elective | | 3 |
| CE-UY 3153 | Geotechnical Engineering | 3 |
| CE-UY 3163 | Materials for the Built Environment | 3 |
| Civil Engineering Elective #1 | | 3 |
| Free Elective #1 | | 3 |
| | **Credits** | **15** |
| **7th Semester/Term** | | |
| Humanities and Social Sciences Elective #3 | | 4 |
| Civil Engineering Elective #2 | | 3 |
| Free Elective #2 | | 3 |
| CE-UY 4092 | Leadership, Business Principles, Policy and Ethics in Civil Engineering | 2 |
| CE-UY 4803 | Civil Engineering Capstone | 3 |
| | **Credits** | **15** |
| **8th Semester/Term** | | |
| CE-UY 48X3 | Civil Engineering Concentration Capstone | 3 |
| Civil Engineering Elective #3 | | 3 |
| Free Elective #3 | | 3 |
| Free Elective #4 | | 3 |
| Humanities and Social Sciences Elective #4 | | 4 |
| | **Credits** | **16** |
| | **Total Credits** | **129** |

# Learning Outcomes

Upon successful completion of the program, graduates will:

1. Apply scientific principles, interdisciplinary knowledge, critical thinking skills, cutting-edge technology, and a passion for civil engineering to solve complex engineering and societal problems.
2. Demonstrate leadership in professional careers, pursue continuous and lifelong learning, and progress towards professional licensure.
3. Communicate and collaborate effectively with industry professionals, decision-makers, and community stakeholders.
4. Work in an ethical and professional manner towards sustainable and resilient civil and urban infrastructure systems.
5. Successfully perform functions of civil engineering practice, including analysis, design, project management, experimentation, interpretation of data, application of new knowledge, and use of sound engineering judgment to draw conclusions.
6. Have an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
7. Have an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
8. Have an ability to communicate effectively with a range of audiences.
9. Have an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
10. Have an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
11. Have an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
12. Have an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

# Policies

# NYU Policies

University-wide policies can be found on the New York University Policy pages (https://bulletins.nyu.edu/nyu/policies/).

# Tandon Policies

Additional academic policies can be found on the Tandon academic policy page (https://bulletins.nyu.edu/undergraduate/engineering/academic-policies/).

## Accreditation

The BS in Civil Engineering is accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org.