CIVIL ENGINEERING - MINOR

The undergraduate minor in civil engineering serves CU Boulder students interested in an introductory exposure to the broad discipline of civil engineering. The minor is intended to expose students to five sub-disciplines of civil engineering. The minor is not open to civil engineering majors, or Engineering Plus majors with a civil engineering emphasis.

Requirements

Admission
A cumulative GPA of 2.750 or higher is required to be admitted to the minor. See the civil engineering undergraduate academic advisor (https://www.colorado.edu/engineering-advising/people) for additional admissions details.

Prerequisites
The following prerequisite courses are required, with a grade of C- or higher in each. A student may be accepted into the minor with no more than two of these courses as deficiencies. All deficiencies must be completed before the minor is awarded.

- Calculus 1 (APPM 1350 or MATH 1300)
- Calculus 2 (APPM 1360 or MATH 2300)
- Calculus 3 (APPM 2350 or MATH 2400)
- Differential Equations and Linear Algebra (APPM 2360, or MATH 2130 and MATH 3430)
- Two semesters of calculus-based physics (PHYS 1110 or PHYS 1115, and PHYS 1120 or PHYS 1125)
- Statics (CVEN 2121, ASEN 2001, GEEN 2851 or MCEN 2023)
- Fluid Mechanics (CVEN 3313, AREN 2120, MCEN 3021, GEEN 3853)
- Mechanics of Materials (CVEN 3161, MCEN 2063)

Residency
18 credits are required for the minor, at least 9 of which must be CVEN courses completed at the CU-Boulder campus.

Minimum Grades
Overall GPA of 2.250 in courses used toward the minor must be maintained, with no individual grade lower than C-.

Required Courses and Credits

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVEN 3246</td>
<td>Introduction to Construction</td>
<td>3</td>
</tr>
<tr>
<td>CVEN 3323</td>
<td>Hydraulic Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CVEN 3414</td>
<td>Fundamentals of Environmental Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CVEN 3525</td>
<td>Structural Analysis</td>
<td>3</td>
</tr>
<tr>
<td>CVEN 3708</td>
<td>Geotechnical Engineering 1</td>
<td>3</td>
</tr>
</tbody>
</table>

One additional proficiency or advanced course in one of the following sub-disciplines:

- Construction Engineering and Management
  - CVEN 3256 | Construction Equipment and Methods        |              |
  - AREN 4506 | Pre-construction Estimating and Scheduling |              |

Environmental Engineering
- CVEN 3424 | Water and Wastewater Treatment            |              |
- CVEN 4404 | Water Chemistry                           |              |
- CVEN 4434 | Introduction to Applied Ecology           |              |
- CVEN 4474 | Hazardous and Industrial Waste Management |          |
- CVEN 4484 | Introduction to Environmental Microbiology|              |

Geotechnical Engineering
- CVEN 3718 | Geotechnical Engineering 2                |              |

Structural Engineering
- CVEN 4545 | Steel Design                               |              |
- CVEN 4555 | Reinforced Concrete Design                 |              |

Water Resource Engineering
- CVEN 4333 | Engineering Hydrology                      |              |
- CVEN 4353 | Groundwater Engineering                     |              |

Civil Systems
- CVEN 4147 | Civil Engineering Systems                  |              |

Total Credit Hours: 18