Prerequisite Requirements for Graduate Degrees in Civil Engineering

1. Suggested course numbers are provided, but prerequisites may be fulfilled with equivalent courses taken at the undergraduate or graduate levels, either at CU Denver or at an equivalent institution.

2. Applicants with more than 5 deficiencies will not be admitted except for rare instances.

3. After admission, a student may file a petition to the department to have a prerequisite waived.

4. A student may complete no more than 9 credit hours of graduate work before completing all prerequisites.

5. Fulfillment of prerequisites, which requires a grade of C- or better, will be checked by the student’s research advisor when the student applies for admission to candidacy prior to graduation.

1. Master of Science or PhD in Civil Engineering → Mark courses taken including specialty area list.
   - Calculus I (MATH-1401 or equivalent)
   - Calculus II (MATH-2411 or equivalent)
   - Calculus III (MATH-2421 or equivalent)
   - Linear Algebra and Differential Equations (MATH-3195 or equivalent)
   - Physics I (PHYS-2311 or equivalent)
   - Statics (CVEN-2121 or equivalent)
   - Mechanics of Materials (CVEN-3121 or equivalent)
   - Fluid Mechanics (CVEN-3313 or equivalent)
   - Computer Programming (CVEN-2200 or equivalent)

   1.1 Construction Engineering and Management
   - Engineering Surveying (CVEN-2212 or equivalent)
   - Probability and Statistics (MATH-3800 or equivalent)
   - Introduction to Structural Materials (CVEN 3141 or equivalent)
   - Structural Analysis (CVEN-3505 or equivalent)

   1.2 Hydrologic, Environmental and Sustainability
   - General Chemistry (CHEM-1130 or equivalent)
   - Probability and Statistics (MATH-3800 or equivalent)
   - Environmental Engineering (CVEN-3401 or equivalent)

   Note: Statics (CVEN-2121) and Mechanics of Materials (CVEN-3121) are NOT required for this specialty area.

   1.3 Geographic Information Systems and Geometrics
   - Engineering Surveying (CVEN-2212 or equivalent)
   - Probability and Statistics (MATH-3800 or equivalent)
   - Any other course listed on another M.S. specialty area list

   1.4 Geotechnical
   - Physics II (PHYS-2331 or equivalent)
   - Dynamics (CVEN-3111 or equivalent)
   - Geotechnical Engineering I (CVEN-3718 or equivalent)
   - Geotechnical Engineering II (CVEN-4728 or equivalent)
   - Intermediate Foundation Engineering (CVEN-4738 or equivalent)
   - Engineering Geology (CVEN-5780 or equivalent)

   1.6 Structural
   - Physics II (PHYS-2331 or equivalent)
   - Dynamics (CVEN-3111 or equivalent)
   - Structural Analysis (CVEN-3505 or equivalent)
   - Geotechnical Engineering I (CVEN-3718 or equivalent)
   - Structural Steel Design (CVEN-4575 or equivalent)
   - Reinforced Concrete Design (CVEN-4585 or equivalent)

   1.7 Transportation
   - Probability and Statistics (MATH-3800 or equivalent)
   - Transportation Engineering (CVEN-5621 or equivalent)
   - Engineering Economy or Contracts or Cost Estimation (CVEN-4077, 4087, or 5233 or equivalent)
   - Highway Engineering (CVEN-5602 or equivalent)
   - Any other course listed on another M.S. specialty area list

* EASPhD students must satisfy all pre-requisites specified by their adviser, which will range between the CE PhD requirements for a student’s specialty area and the MEng requirements of that area if offered. See other side.
2. Master of Engineering → Mark courses already taken in relevant specialty area list.

Note: All courses listed on previous page DO NOT apply to Masters of Engineering students.

2.1 Construction Engineering and Management

- Calculus I (MATH-1401 or equivalent)
- Calculus II (MATH-2411 or equivalent) or Autocad (CVEN 1025 or equivalent)
- Probability and Statistics (MATH-3800 or equivalent)
- Physics I (PHYS-2311 or equivalent)
- Statics (CVEN-2121 or equivalent)
- Engineering Surveying (CVEN-2212 or equivalent)
- Computer Programming (CVEN-2200 or equivalent)

2.2 Geographic Information Systems and Geomatics

- Calculus I (MATH 1401 or equivalent)
- Probability & Statistics (MATH 3800 or equivalent; CVEN 5611 will satisfy requirement)
- Plane Surveying (CVEN 2212 or equivalent; CVEN 5391 will satisfy requirement)
- Two basic science courses (e.g., Physics, Chemistry, Biology, Ecology, Physiology)
- Computer Programming (CVEN 2200 or equivalent or other programming courses)

2.3 Hydrologic, Environmental and Sustainability

- Calculus I (MATH-1401 or equivalent)
- Calculus II (MATH-2411 or equivalent)
- Probability and Statistics (MATH-3800 or equivalent)
- Physics I (PHYS-2311 or equivalent)
- Chemistry or Biology or Ecology
- Computer Programming (CVEN-2200 or equivalent)

2.4 Transportation Systems

- Calculus I (MATH 1401 or equivalent)
- Probability & Statistics (MATH 3800 or equivalent; CVEN 5611 will satisfy requirement)
- Engineering Economy (CVEN 4077 or equivalent or other economics courses)
- Two basic science courses (e.g., Physics, Chemistry, Biology, Ecology, Physiology)
- Computer Programming (CVEN 2200 or equivalent or other programming courses)

* EASPhD students must satisfy all pre-requisites specified by their adviser, which will range between the CE PhD requirements for a student’s speciality area and the MEng requirements of that area if offered. It depends on a student’s intended curriculum and dissertation emphasis, career goals, and plans to pass the FE and PE exams.

Separate list for Ph.D. in Civil Engineering Systems has been removed and is no longer needed.