Prerequisite Requirements for Graduate Degrees in Civil Engineering

Name __________________________________________________________

Degree/Discipline

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 Ph.D. in Civil Engineering → Check the following courses, plus the relevant discipline-specific 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**
   - Probability and Statistics (MATH-3800 or equivalent)
   - Physics I (PHYS-2311 or equivalent)
   - Introduction to Structural Materials (CVEN 3141 or equivalent)
   - Plane Surveying (CVEN-2212 or equivalent)
   - Structural Analysis (CVEN-3505 or equivalent)

   **1.2 Environmental and Sustainability**
   - Probability and Statistics (MATH-3800 or equivalent)
   - General Chemistry (CHEM-1130 or equivalent)
   - Environmental Engineering (CVEN-5401 or equivalent)

   **1.3 Geomatics and Geographic Information Systems (GIS)**
   - Probability and Statistics (MATH-3800 or equivalent)
   - Physics II (PHYS-2331 or equivalent)
   - Plane Surveying (CVEN-2212 or equivalent)
   - Any other course listed on another M.S. discipline-specific 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)

   **1.5 Hydrologic and Hydraulic Engineering**
   - General Chemistry (CHEM-1130 or equivalent)
   - Physics II (PHYS-2331 or equivalent)
   - Dynamics (CVEN-3111 or equivalent)
   - Hydrosystems Engineering (CVEN-3323 or equivalent)
   - Water Supply and Distribution Systems (CVEN-3414 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**
   - Physics II (PHYS-2331 or equivalent)
   - Probability and Statistics (CVEN-5611 or equivalent)
   - Engineering Economy or Contracts or Cost Estimation (CVEN-4077, 4087, or 5233 or equivalent)
   - Transportation Engineering (CVEN-5621 or equivalent)
   - Highway Engineering (CVEN-5602 or equivalent)
   - Any other course listed on another Master of Science discipline-specific list

* For the PhD in Civil Engineering Systems, see the list on page 2.

Reviewed and signed by Advisor ________________________________

Student ____________________________ Date _________________

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2. Master of Engineering → Check the appropriate discipline-specific list below.

2.1 Construction Engineering and Management
- 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)
- Statics (CVEN-2121 or equivalent)
- Plane Surveying (CVEN-2212 or equivalent)
- Computer Programming (CVEN-2200 or equivalent)

2.2 Geomatics and Geographic Information Systems (GIS)
- Calculus I (MATH-1401 or equivalent)
- Calculus II (MATH-2411 or equivalent)
- Probability and Statistics (MATH-3800 or equivalent)
- Basic Science (2 semesters)
- Plane Surveying (CVEN-2212 or equivalent)
- Computer Programming (CVEN-2200 or equivalent)

2.3 Sustainable Infrastructure
- 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)
- Physics II (PHYS-2331 or equivalent) or Thermodynamics (ENGR-3012 or equivalent)
- Chemistry or Biology or Ecology
- Computer Programming (CVEN-2200 or equivalent)
- Environmental Engineering (CVEN-5401 or equivalent)

2.4 Transportation Systems
- 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)
- Basic Science (in addition to Physics I)
- Economics (Macro-, Micro-, or Engineering Economics) or approved related topics
- Computer Programming (CVEN-2200 or equivalent)

3. Ph.D. in Civil Engineering Systems → Check the following courses.
- Calculus I (MATH-1401 or equivalent)
- Calculus II (MATH-2411 or equivalent)
- Probability and Statistics (CVEN-5611 or equivalent)
- Physics I (PHYS-2311 or equivalent)
- Two additional basic science courses (e.g., Physics II, Chemistry, Biology, Ecology, Physiology)
- Statics (CVEN-2121 or equivalent)
- Fluid Mechanics (CVEN-3313 or equivalent)
- Computer Programming (CVEN-2200 or equivalent)

Reviewed and signed by Advisor ___________________________
Student ___________________________ Date _____________