4 + 1 program
Hydrology and Hydraulics

Want to earn your Master of Science in civil engineering in one year of full-time study beyond your Bachelor of Science in civil engineering? Then take a look at our 4 + 1 program.

There are many reasons to consider a master's degree:

- Gain top-notch training in your chosen civil engineering specialty.
- Become an expert in your chosen thesis (or report) research.
- Position yourself in a competitive employment market.
- Earn 9-13% more than those with only a bachelor's degree.

The Master of Science program in hydrology and hydraulics prepares you for a career in planning, design, and management of water resources. In Colorado, these skills are expected to be in high demand as our population increases by about 60% from 2010 to 2040, largely in the urban Front Range, without a corresponding increase in water supply. In fact, climate change is expected to make the water supply more variable, with larger floods and longer droughts. Accordingly, skills in hydrology (surface, vadose, and groundwater) and urban hydrology (stormwater modeling, management, and flood mitigation) are likely to be in high demand in metropolitan Denver, which is a hub for hydrology and hydraulics with numerous private, governmental, and nonprofit organizations. See below for an outline of the curriculum.

SENIOR YEAR Fall Semester	
CVEN 4000	Senior Seminar
CVEN 4230	Construction Engineering Systems
CVEN 4xxx	Design Elective (1 of 3)
CVEN 5427[1]	Storm Water System Design
Varies	Technical Elective
TOTAL CREDITS	**12**

SENIOR YEAR Spring Semester	
CVEN 4067	Senior Design
CVEN 4xxx	Design Elective (2 of 3)
CVEN 4xxx	Design Elective (3 of 3)
CVEN 5333[1]	Surface Water Hydrology
Varies	Core Curriculum
TOTAL CREDITS	**15**

GRADUATE YEAR Fall Semester	
CVEN 5334[2]	Groundwater Hydrology
CVEN 5337	Sustainable Hydraulic Systems Design
CVEN 5xxx	Graduate Elective (1 of 2)
CVEN 5950[3]	Master's Thesis (1 of 2)
TOTAL CREDITS	**12**

GRADUATE YEAR Spring Semester	
CVEN 5336	Urban Runoff Quality and Quantity Modeling
CVEN 5343	Open Channel Hydraulics
CVEN 5xxx	Graduate Elective (2 of 2)
CVEN 5950[3]	Master's Thesis (2 of 2)
TOTAL CREDITS	**12**

Ready to apply? Visit http://engineering.ucdenver.edu/civil/admission-MS.

1. Courses count toward bachelor's and master's degrees.
2. CVEN-5335 Vadose Zone Hydrology may be taken instead of CVEN-5334 Groundwater Hydrology.
3. CVEN-5960 Master Report and a third Graduate Elective may substitute for 2×(CVEN-5950).

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