

Environmental Engineering

Five-year Bachelor of Science / Master of Science

- Brown undergraduates in engineering and other quantitative concentrations may apply to enter an integrated program leading to a master of science degree completed in two semesters following the completion of their bachelor of science (Sc.B.) degree. The program requirements are identical to those of the regular Sc.M. degree programs, with the exception that 5th Year students are able to share up to two relevant 1000- or 2000-level Engineering courses between their bachelor's and master's programs. The maximum number of courses that can be transferred from the undergraduate program is two.

Master of Science (Thesis Option)

- Candidates must complete a coherent plan of study based in engineering or engineering science consisting of eight graduate or advanced level courses and an acceptable thesis, which is normally sponsored by a member of the engineering faculty.
- The program must include ENGN 2010 and ENGN 2020 (Mathematical Methods in Engineering and Physics) or their equivalent (must be 2000-level)
- ENGN 2010 and/or ENGN 2020 can be replaced by an alternate/ applied mathematics course or 2000-level engineering/science course. This substitution can only be made with the approval of the appropriate Graduate Representative and the Director of Graduate Studies. The final program must contain at least one advanced (2000-level) mathematics/applied mathematics course.
- A three-course core in environmental engineering is taken which includes thermodynamics (ENGN 2730, CHEM 2010), groundwater (ENGN 2342), and transport (typically ENGN 2911P), or other appropriate courses chosen in consultation with the advisor.
- The final three courses are electives (at least two at the 2000-level) or can be used for thesis preparation (ENGN 2980 Special Projects: Reading, Research, Design). Students should choose courses in consultation with the student's advisor to develop a coherent program.
- The proposed program of study must be approved by the Director of Graduate Programs in the School of Engineering.

For students in a Master of Science in Environmental Engineering program (Thesis Option), the approved course sequence is 2-2-2-2, where the student takes two courses in each semester. However, the program strongly recommends a sequence of 3-2-2-1 where the student takes 3 courses the first semester, 2 the second, 2 the third, and 1 the fourth. **Deviations from these schedules can result in additional tuition.**

PHYS 2020	Mathematical Methods of Engineers and Physicists	1
or ENGN 2010	Mathematical Methods in Engineering and Physics I	
ENGN 2020	Mathematical Methods in Engineering and Physics II	1
CHEM 2010	Advanced Thermodynamics	1
ENGN 2342	Groundwater Flow and Transport	1
ENGN 2911P	Fate and Transport of Environmental Contaminants	1
Three additional Engineering courses (at least one 2000-level and up to two ENGN 2980)		3
Total Credits		8

Master of Science (Non-Thesis Option)

- Candidates must complete a coherent plan of study based in engineering or engineering science consisting of eight graduate or advanced level courses.
- The program must include ENGN 2010 and ENGN 2020 (Mathematical Methods in Engineering and Physics) or their equivalent (must be 2000-level)
- ENGN 2010 and/or ENGN 2020 can be replaced by an alternate/ applied mathematics course or 2000-level engineering/science course. This substitution can only be made with the approval of the appropriate Graduate Representative and the Director of Graduate Studies. The final program must contain at least one advanced (2000-level) mathematics/applied mathematics course.
- A three-course core in environmental engineering is taken which includes thermodynamics (ENGN 2730, CHEM 2010), groundwater (ENGN 2342), and transport (typically ENGN 2911P), or other appropriate courses chosen in consultation with the advisor.
- The final three courses are electives at least two at the 2000-level. Students should choose courses in consultation with the student's advisor to develop a coherent program.
- The proposed program of study must be approved by the Director of Graduate Programs in the School of Engineering.

For students in the Master of Science in Environmental Engineering program (Non-Thesis Option), the approved course sequence is 3-3-2, meaning the student takes 3 courses the first semester, 3 the second, and 2 the third. **Any deviation from this schedule can result in additional tuition and/or penalties.**

Note: Students enrolled in the Ph.D. program, including first-year fellowship students, should understand that an application to receive a non-thesis Sc.M. in engineering must be approved by the student's research advisor.

PHYS 2020	Mathematical Methods of Engineers and Physicists	1
or ENGN 2010	Mathematical Methods in Engineering and Physics I	
ENGN 2020	Mathematical Methods in Engineering and Physics II	1
CHEM 2010	Advanced Thermodynamics	1
ENGN 2342	Groundwater Flow and Transport	1
ENGN 2911P	Fate and Transport of Environmental Contaminants	1
Three additional Engineering courses (at least two at the 2000-level, other than ENGN2980)		3
Total Credits		8