



Civil & Environmental Engineering with Ecosystem Health

Department of Civil and Environmental Engineering

Engineers have a mandate to protect public health and safety and to enhance the quality of life. Students participating in the Environmental Option of the Civil Engineering program learn how to fulfill this mandate and, at the same time, minimize the effect of human activities on the environment. The general public realizes that our environment is not indestructible and that there are limits on development. The public would like to see development go hand-in-hand with responsible environmental stewardship.

Students selecting the Environmental Option in the Civil Engineering program take courses in basic biochemistry and microbiology applicable to environmental engineering, waste water treatment, air pollution, ethics, law and sustainable development, water management, water pollution design, hydrology, hydrogeology, municipal engineering, environmental hydraulics, groundwater management, solid waste management, and environmental hazards (e.g. floods, hurricanes, earthquakes).

Students registered in the Ecosystem Health program take courses in biology, ecology, patterns in life's diversity, environmental biology, ecosystem health, ecosystem ecology, human and animal interactions with the physical environment.

The B.E.Sc. in Civil Engineering (Environmental Option) is a four year program while the B.Sc. with a Major in Ecosystem Health is of three years duration. However, some courses can be counted towards both degrees and the end result is that a program has been established which allows the student to graduate with both degrees in five years. Students take the common first year of Engineering courses. After second year, for the next three years, a combination of courses from the third and fourth years of the B.E.Sc. degree and the second and third years of the B.Sc. degree are taken depending on timetabling and prerequisites.

Admission and Program Structure

In order to be eligible to enter the Major in Ecosystem Health a minimum mark of 60% in Biology 1222 or 1223 and 50% in each of: Applied Math 1413, Physics 1026 and Chemistry 1024a/b is required. Students may enter Year 2 of the Ecosystem Health module only after completion of Year 2 of the concurrent program. In order to be considered for the concurrent program, students must apply and be admitted to the Ecosystem Health module by the Office of the Dean of the Faculty of Science after completion of the required prerequisite courses. At least 8 of the courses counted towards the B.Sc. degree must be taken from the offerings of the Faculty of Science. In addition students must take 1.0 course from each of Category A and Category B (see calendar for listing of course categories). As well, 2.0 designated essay courses must be taken (Eng Sci 2211F/G and Eng Sci 4498F/G will count as 1.0 of the essay requirement). A maximum of 10.0 courses may be double tied to both degrees. The final course selection must be approved in consultation with both the Faculty of Engineering and the Faculty of Science.



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First year Engineering program (2010-2011): Applied Math 1413, Eng Sci 1050, Physics 1026, Applied Math 1411a/b, Chemistry 1024a/b, Eng Sci 1021a/b, Eng Sci 1022a/b/y, Eng Sci 1036a/b, 1.0 non-technical elective.

Second year Engineering program (2011-2012): Applied Math 2411, CEE 2224, CEE 2202a, CEE 2217a, CEE 2220a, CEE 2219b, CEE 2221b, Earth Sciences 2281b, Biology 1222 or 1223 (required for admission to the Major in Environmental Science).

(Note: Eng Sci 2211G and Stat Sci 2141a which are taken out of second year to make room for Biology 1222 or 1223 must be taken for the B.E.Sc. degree).

Note: CEE 3324a (Surveying) is available each summer (15 days) and must be completed before a student may graduate from the Civil Engineering program.

Third year Engineering program: CEE 3326, CEE 3347a, CEE 3348a, CEE 3362a, CEE 3386a, Earth Sciences 3340a, CEE 3355b, CEE 3361b, CEE 3369b, CBE 4409b, 0.5 non-technical elective (Geog 2430a/b or Geog 3431a/b or Sociology 2246a/b).

Fourth year Engineering program: CEE 4441, Business 2299, CEE 4426a, CEE 4465a, CEE 4405a, CEE 4476b, CEE 4478b, Eng Sci 4498G, three 0.5 technical electives. (Note: CEE 4405a is used as one 0.5 fourth year technical elective in the Engineering program so two additional technical electives from Civil Engineering are required).

Major in Ecosystem Health Module:

(This module cannot be completed in a single year because of prerequisites. The 3000 and 4000-level courses require the 2000-level Biology courses as prerequisites, so this must be taken into consideration. This module, therefore, will take at least two years to complete after having taken Biology 1222 or 1223.)

- Biology 2483a
- Biology 2484a
- Biology 4230a/b
- Biology 4405F/G
- 0.5 course from: Biology 2485b or Medical Biophysics 3336G
- 0.5 course from: Biology 2244a/b, Stat Sci 2122a/b, Stat Sci 2035, Psych 2810 (replaced by Stat Sci 2141a)
- 1.0 courses from: CBE 4409a/b, CEE 4405a/b
- 0.5 course from: Chemistry 2210a/b (replaced by CEE 2217a/b)
- 0.5 course from: Geog 2430a/b or Geog 3431a/b or Sociology 2246a/b (used as upper year non-technical elective)
- 1.0 courses from: Epidemiology and Biostatistics 3330b, Microbiology and Immunology 2500b, Pathology 3240a, 4400a/b, Pharmacology and Toxicology 3560a/b, 4460a/b

Note: This document is for guideline purposes only. Once a student is admitted to the concurrent program, they will receive an outline from the Faculty of Science detailing the courses which will be used for the B.Sc. degree.