



Civil & Environmental Engineering with Environmental Science

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. Thus there is a need for civil engineers with a background in environmental science in positions with government, industries such as Union Gas, Ontario Power Generation and with consulting firms and contractors.

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 Environmental Science program take courses in biology, environmental problems, environmental biology, productivity and pollution in aquatic ecosystems, plants as a human resource, population ecology, interaction with the physical environment in the animal and human community and eco-system ecology, and urban and regional planning.

The B.E.Sc. in Civil Engineering (Environmental Option) is a four year program while the B.Sc. with a Major in Environmental Science 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 Environmental Science a minimum mark of 60% in each of: Biology 1222 or 1223, Chemistry 1024a/b, Applied Math 1413 and Earth Sciences 2281b is required. Students may enter Year 2 of the Environmental Science 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 Environmental Science 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. 2153a/b or 2154F/G).

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: Environmental Science 3350a/b and CEE 4405a are used as two 0.5 fourth year technical electives in the Engineering program so one additional technical elective from Civil Engineering is required).

Major in Environmental Science Module:

- Chemistry 2210a/b (replaced by CEE 2217a)
- 0.5 course from: Biology 2244a, Stat Sci 2035, 2037a, 2122a/b, 2141a/b, Psych 2810 (replaced by Stat Sci 2141a)
- 0.5 course from: Biology 2217b, 2404a, 2483a, 2484a, 2485b
- 0.5 course from: Earth Sciences 2200a/b, 2220a/b, 2230a/b, 2240F/G, 2261a/b, 2265a/b
- 0.5 course from: Geography 2010a/b, 2011a/b, 2012a/b, 2020a/b, 2030a/b, 2040a/b, 2045a/b, 2070E, 2131a/b, 2151a/b, 2152a/b, 2153a/b, 2154F/G, 2155F/G (used as upper year non-technical elective) (Module will be 6.5 courses if [Geography 2070E](#) is taken.)
- Environmental Science 3300F/G
- Environmental Science 3350a/b (used as a fourth year technical elective)
- 2.5 additional courses from the Environmental Science Course List below including at least 0.5 course from each of the 3 subject areas. (CBE 4409b and CEE 4405a will count as 1.0 course in this category)

Environmental Science Course List:

Environmental Life Science Courses:

Biology 2404a, 2217b, 2483a, 2484a, 2290F/G, 3220Z, 3421F, 3435F/G, 3440a/b, 3442F/G, 3445F, 3446b, 3475a/b
Earth Science 2261a/b, 2265a/b, 3369a/b
Geography 2320a/b
Pathology 3240a/b
Pharmacology and Toxicology 3560a/b
Microbiology and Immunology 2100a

Environmental Philosophy, Policy and Political Science Courses:

Geography 2011a/b, 2012a/b, 2040a/b, 2151a/b, 2152a/b, 2153a/b, 2154F/G, 2155F/G, 2162a/b, 2430a/b, 2450F/G
History 3407F/G, (Brescia): 2123, 2211E, 3217E

Environmental Physical Science Courses:

Earth Sciences 2200a/b, 2220a/b, 2230b, 2240a/b, 3340a/b, 3341a/b, 4431a/b
CBE 4409a/b, CEE 4405a/b
Geography 2122a/b, 2210a/b, 2220a/b, 2240a/b
2310a/b, 2330a/b, 2340a/b
Medical Biophysics 3336F/G
Physics 2070a/b

Philosophy 2033a/b

Political Science 2137, 2235E

Sociology 2101F/G, 2103F/G, 2104F/G

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.