

McGILL UNIVERSITY
Department of Geography

Soils and Environment (GEOG 305)

This course aims to give students a basic understanding of the properties of soils, the distribution and characteristics of major soil groups, their limitation for different land uses and the impact of environmental change on soils. The course is designed to accommodate geographers, geologists and ecologists. There are no set prerequisites to the course, apart from Environmental Systems (GEOG 203) or an equivalent. The objectives will be achieved through a mixture of lectures (Tuesday and Thursday, 10.00 - 11.30 h, IB 23), a one day field trip (Sunday, September 18) to Mont St. Hilaire to describe and collect soils and a six-week session of laboratory analyses of soils (at times to be decided later).

Evaluation of the course will be based on a mid-term test (30%), a final examination (30%), the laboratory analyses (10%) and a term paper (30%) which draws on the information collected on the field trip and the laboratory analyses of the soils collected. The latter is based on a group effort, so some co-operation in the early stages from field data collection to laboratory analyses and result collation makes life easier later.

There is no strongly recommended text. A Course Pack is available in the University Bookstore, containing copies of selected research papers, and the Laboratory Manual. PowerPoint lecture slides will be available on WebCT and the Departmental web site and printed version from the EUS Copy Service. Notes on the field description of soils will be distributed in class. A Teaching Assistant will be available to help with the field-work and laboratory analyses.

Lecture Topics

1. Concepts of soil: soils and environmental processes.
2. The physical, chemical and biological properties of soils.
3. Soils as dynamic systems: changes in soil water, air, nutrients and structure.
4. Plants and soils: concepts of nutrient availability and its measurement.
5. Weathering in soils.
6. Soil formation: concepts and application.
7. Soils of the polar, boreal and temperate regions.
8. Hydromorphic soils: gleysols and peats.
9. Soils of the temperate grasslands and deserts.
10. Soils of the tropics.
11. Soil classification, land capability assessment and land use. Soil quality.
12. Global change: soils as sources and sinks of greenhouse gases; the effect of climate change on soils; carbon sequestration in soils.

McGill University values academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures (see <<http://www.mcgill.ca/integrity>> for more information).

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