DESIGNING A GEOSCIENCE CURRICULUM TO MEET THE NEEDS OF A CHANGING WORLD
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Stage 2:
Curriculum design: Meeting the needs

B.Sc. Hons. Earth & Environmental Sciences
The program is designed to provide students with a broad background in geoscience yet allow them to gain ‘in depth’ knowledge in a specialist field. Knowledge and skills considered as essential for all graduates are included as ‘core’ courses: experimental learning opportunities and additional skills development are systematically integrated throughout the program. Upon graduation students are well prepared for a broad range of careers or educational opportunities.

The ideal graduate should have:
- Core and special stream structure (breadth & depth)
  - Common Level 1 (Science I)
  - Core courses (Levels II – IV) essential for all graduates
  - Specialisations (Levels III – IV)
- Geosciences, Hydrosciences, Geochemistry
- Co-op option (entry in Level III inc. 2 – 8 month work terms)

Experiential learning & skills development are integrated into courses systematically from Level I through Level IV

Fieldwork
Level I
30 students
10 day field course
Local area - techniques
Lab work - analysis
2 instructors, 15 TA’s
Hotel accommodation

Level II
30 students
Optional weekend field trip
Earth Surface Processes
Lab work - analysis
Field Research II
Compulsory half day

Level III
120 students
Optional weekend field trip
Ecosystem Biogeochemistry
Compulsory half day

Level IV
50 students
Optional weekend field trip
Ecosystem Biogeochemistry
Compulsory half day

Skills Development:
Opportunities for development of personal transferable skills (such as oral, visual and written communication, numeracy, critical thinking, problem solving and inquiry) are systematically integrated into the Earth & Environmental Sciences program.

The ideal graduate should have:
- Strong substantive knowledge
- Balance of breadth and depth
- Hands on experiences – field and lab
- Personal transferable skills
- Academic requirements for professional certification as a geoscientist in Ontario

Other considerations:
Future employment and educational opportunities for graduates
Government: Environment Canada, Ministry of Natural Resources, Ontario Geological Survey, National Water Research Institute, conservation authorities, land use planning...
Private Sector: Environmental consulting, waste management, oil and gas industry, resource exploration, mining, financial services, staff, ware design
Education: Graduate and professional schools (law, medicine, dentistry), teaching...

Where do we go from here?
- Ongoing surveys
  - of graduating students, faculty, alumni and employers
- Ongoing enhancement
  - of instructional methodologies and assessment practices
- Ongoing communication
  - with professional certification organization (APGO)
- Continuous audit of program
  - to ensure integrity of systematic skills acquisition process
- Continuous assessment of program design and content
- Dissemination and exchange of ideas at national and international meetings
- Keeping in touch with the needs of our changing world!