UNIVERSITY OF CALGARY | FACULTY OF SCIENCE

CURRICULUM REVIEW REPORT
ENVIRONMENTAL SCIENCE PROGRAM

Curriculum Review Team

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Overview and Context of the Program

The undergraduate Environmental Science Program (ENSC) offers a Bachelor of Science degree in Environmental Science that is focused on learning by doing in a research environment. The ENSC Program is strongly interdisciplinary and spans the Faculties of Arts and Science. Our mission and goals are to produce graduates who can critically and objectively address potential or actual environmental issues of all kinds through experiential, hands-on learning. We emphasize a multidisciplinary approach to understanding environmental issues facing society while providing each student with expertise in one of six concentrations: Biology, Chemistry, Geology, Geography, Physics and Statistics.

The Environmental Science Program launched in 1997 and has more than 400 graduates working throughout Alberta, Canada and the world. Today we are an accredited program through ECO Canada and the Canadian Society of Chemistry. Students are able to obtain Association of Professional Engineers and Geoscientists of Alberta (APEGA), Professional Agrologist (PAg), Professional Biologist (PBiol), Professional Chemist (PChem), and Professional Physicist (PPhys) accreditation by carefully selecting their options. We are proud that our graduates quickly obtain positions in their field and become leaders in a wide variety of environment-related sectors.

We have four faculty members each representing a key discipline in environmental science, an administrative & student programs officer, and a technologist. We also benefit from the expertise of emeritus professors, adjunct professors, and other professionals from academia, private industry, government, and non-governmental organizations.

Program Outcomes:

Graduates of the Environmental Science Program will be able to:

- identify the historic, climatic, geological and biological settings of a region, particularly Alberta
- assess key physical, chemical and biological processes in air, land and water to deduce the actual or potential effects of human activities on natural systems and vice versa
- design and evaluate studies that recognize the variability inherent in natural and human environments and that can occur during measurements of environmental parameters
- explain and apply the key features of provincial (Alberta) and federal (Canada) environmental regulations
- assess the input of communities and stakeholders for decision-making about environmental issues
- plan and produce environmental impact studies in multi-disciplinary teams
- assess the sustainability of human practices for the natural world and human environments and suggest potential improvements

The ENSC Program curriculum currently meets all the Program Outcomes identified here.

Guiding Questions

ENSC Guiding Questions

- How does ENSC enhance our students' experiences, through ENSC courses using high-impact practices?
- How does the ENSC program prepare students for careers in environmental science through disciplinary content and the development of professional and career-related skills?
- Do all ENSC students have and need opportunities to engage with hands-on independent Environmental projects within our programs?
- What is the ENSC program doing with respect to a longer term vision to meet the future needs of society?

Faculty-Wide Questions:

Based on the data from the National Survey of Student Engagement, the Faculty of Science is seeking additional information regarding High-Impact Educational Practices. High-Impact Practices (HIPs) share several traits: They generally demand considerable time and effort, facilitate learning outside of the classroom, require meaningful interactions between faculty and students, encourage collaboration with diverse others, and provide frequent and substantive feedback. Examples of HIPs include, but are not limited to:

- Learning community or some other formal program where groups of students take two or more classes together
- Courses that included a community-based project (service-learning)
- Work with a faculty member on a research project
- Internship, co-op, field experience, student teaching, or clinical placement
- Study abroad
- Culminating senior experience (capstone course, senior project or thesis, comprehensive exam, portfolio, etc.)

Are High Impact Practices being used regularly in this program?
If not, what is preventing these practices from being used?

ENSC Program Action Plan

Action Plan: The guiding questions and Faculty-wide questions listed above were used to define what the strengths were for the ENSC program and what actions needed to be taken to improve it. The ENSC program has strengths across the board with respect to the questions listed and the items in the table below are actions that can strengthen the ENSC program.

Recommendation	Action Item	Who is Responsible?	Due Date
ENSC course earlier in program	Introduce ENSC 201 as part of the core ENSC curriculum starting in W19	ENSC faculty and ENSC director	ENSC 201 is in the calendar and will be offered in W18 for the first time. The following year this course will be required.
More integration with law and regulatory issues	More material will be introduced in ENSC 502 and will be taught in ENSC 201	ENSC faculty	Winter 2017 for ENSC 502 Winter 2018 for ENSC 201
ENSC faculty collaboration on responding to curriculum mapping survey	ENSC faculty work in teams to assess whether each item is Introductory, Developed or Advanced	ENSC faculty	Next Curriculum mapping exercise 2021
ENSC student participation in goal setting, outcome development, program development and curriculum	ENSC students included in ENSC meetings and invited to retreats, external review committee meetings, etc.	ESSA	Environmental Science Student's Association (ESSA) mandate Fall 2016
Promptness in returning graded material	Provide timelines for TA's and faculty in returning graded material	Course instructors and ENSC director	Winter 2017
Introduction to opportunities for professional accreditation earlier in the program	- Add professional accreditation to ENSC 201 curriculum - Introduce advising sessions for Incoming ENSC students	ENSC faculty and ENSC director	Fall 2017 and Winter 2018