

Honours Bachelor of Arts and Science (HBASc) in Environmental Sustainability

PART 1: Proposed HBASc in Environmental Sustainability at the Orillia Campus

Introduction

The Lakehead University Orillia Campus Plan (2009-2013) identifies “the need to provide substantive growth of Lakehead University’s undergraduate enrolment” and emphasized “the need to increase opportunities for innovative degree programming”. The campus plan, academic plan, and enrolment plan for the Orillia campus all support establishing the HBASc in Interdisciplinary Studies with an Environmental Sciences or Studies major by 2009 as part of the goal to meet “the University’s commitment to comprehensiveness”. Orillia will soon be home to Canada's first LEED (Leadership in Energy and Environmental Design) Platinum university campus, which will become a hallmark of sustainable and ecologically sensitive development and a centre of research and learning in the environmental sciences. It will serve as a demonstration site for green technology, energy efficiency, and environmental sustainability. The proposed Honours Bachelor of Arts and Science (HBASc) in Environmental Sustainability has been designed to address the campus vision for both growth and comprehensiveness. It will build on the University and Community partnerships developed as part of the vision for the LEED Platinum Campus.

Development of the Honours Bachelor of Arts and Science (HBASc) in Environmental Sustainability began in Fall 2008 following the release of the 2008 Campus Plan. An Environmental Sustainability Program Planning Committee, chaired by Dr. Alice den Otter, was formed to initiate planning. The committee met several times including consultation with colleagues from the Thunder Bay campus to discuss a preliminary model for this program. The Program Planning Committee was expanded in September 2009. The new Orillia tenure track appointment in Environmental Science, Dr. Sreekumari Kurissery subsequently became the Chair of the committee. The committee included faculty and administrative representatives from the Orillia campus as well as the Thunder Bay campus and an Orillia student representative. The Committee (see below) met weekly for two months (via videoconferencing) to discuss the attached proposal.

- Dr. Alice den Otter (Chair, Department of Interdisciplinary Studies)
- Dr. Andrew Dean (Dean, Faculty of Science and Environmental Studies)
- Ms. Christina Buzzi (Career & Co-operative Education Services)
- Dr. Mary Thornbush (Department of Geography/Interdisciplinary Studies)
- Mr. Michael Thorn (Student Representative)
- Dr. Moira McPherson (Associate Vice-President Academic)

- Dr. Nandakumar Kanavillil (Department of Biology/Interdisciplinary Studies)
- Dr. Peter Lee (Chair, Department of Biology)
- Dr. Phil Fralick (Department of Geology)
- Dr. Sreekumari Kurissery (Department of Biology/Interdisciplinary Studies))
- Dr. Ulf Runesson (Interim Dean, Faculty of Forestry and the Forest Environment)

A Foundation for the Environmental Sustainability Program

At the World Commission on Environment and Development (the Brundtland Commission, 1987), sustainability was defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Sustainable development, in the broadest sense, aims at promoting harmony between human beings and between humanity and nature” [Report on the World Commission on Environment and Development: *Our Common Future*, Chapter 2, pages 54, 73]. Based on this definition, the overarching objective of the proposed program is to create citizens responsible for meeting the needs of the present generations by maintaining socially desirable, culturally acceptable, economically sustainable, environmentally robust, and generationally sensitive developmental activities and thereby handing over the planet to the next generations without compromising their ability to meet their needs. The proposed program aims to produce well rounded graduates who have knowledge and understanding in the fields of Environmental Sciences and Environmental Studies; and who are critical thinkers, sensitive to the present day environmental issues, and capable of finding scientifically based solutions to these problems. The triple bottom line model of sustainability suggested by Elkington (1998) forms the inspirational model for this HBASc program.

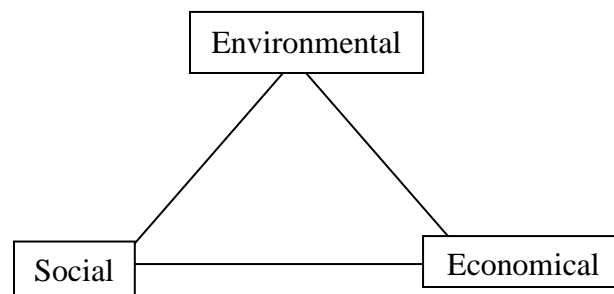


Figure 1. Inspirational model for the HBASc in environmental sustainability (Adapted from John Elkington (1998), *Cannibals with Forks: The Triple Bottom Line of 21st Century Business*)

Our program model not only focuses on ecological, social and economical aspects of sustainability but also emphasizes inquiry-based qualitative and quantitative methodological training necessary for ongoing environmental sustainability (Fig.2)

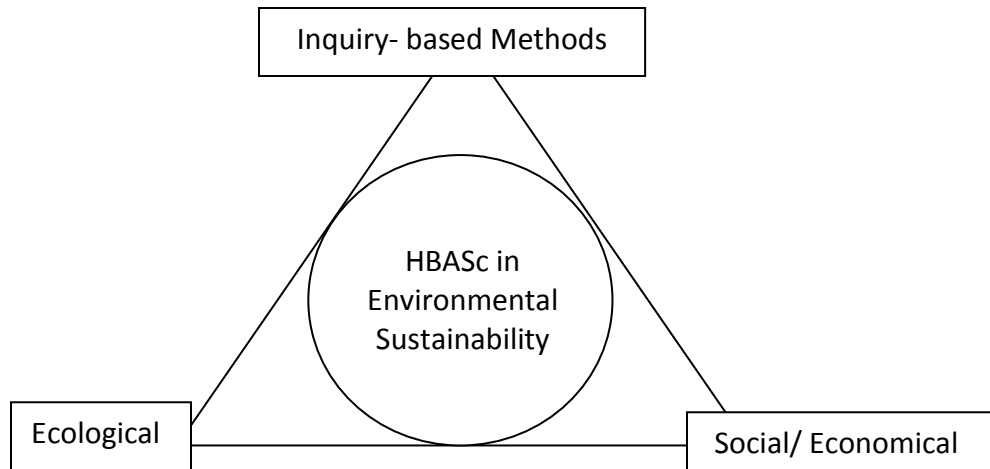


Figure 2. Our program model

Note that our consideration of economic factors is not just financial, but is focused on conservation and resource management as well as social accountability. Interdisciplinary inquiry courses include these elements from various perspectives including aboriginal perspectives. According to the famous Native American Proverb, “We do not inherit the earth from our ancestors; we borrow it from our children.”

Overview of the Proposed Program

Educational Goals for the Honours Bachelor of Arts and Science (HBASc) in Environmental Sustainability

This HBASc in Environmental Sustainability has been designed to produce well-rounded, environmentally conscious and responsible citizens, with excellent communication skills and problem solving abilities. Graduates of this degree will be able to meet the growing demands of interdisciplinary environmental practitioners and will be appropriately trained to pursue graduate studies in a variety of disciplines related to Environmental Sustainability.

Program objectives include:

- To provide students with the opportunity for in-depth study of Earth as a biosphere, historical perspectives on its origin, contemporary environmental issues and future challenges;
- To highlight the importance of various physical, chemical and biological processes underlying the sustainability of planet Earth;
- To examine the impacts of anthropogenic, cultural, social, economic and political interventions on the biosphere;
- To outline conservation strategies, environmental policies, and the need to protect our natural resources so that they are safe and available for the future generations;

- To provide hands-on experience with ecosystem research, and familiarity with both quantitative and qualitative analytical tools;
- To engage students in addressing local, regional, and global environmental issues through an interdisciplinary inquiry-based approach;
- To provide real world experiences through opportunities for collaboration with community organizations;
- To expose students to a wide variety of diverse regional ecosystems through outdoor field experiences in both pristine and disturbed habitats.

The 4-year HBASc Curriculum in Environmental Sustainability

A total of 20 full course equivalents (FCEs) is required for graduation. Students must take 16 FCEs of required courses as stipulated below. A total of 4.0 FCEs (See item 9& 10, program regulations) of elective courses may be chosen from within or outside of the Department (see recommended list of electives). Up to two of these electives may be taken from any faculty.

First Year:

- a) Biology 1110 Plant Biology
- b) Geography 1120 Environmental Issues: A Geographical Approach
- c) Biology 1130 Animal Biology
- d) Inquiry1010 Foundations of Inquiry
- e) Inquiry 103X Inquiry into Environmental Choices
- f) Geology 1130 Crust of the Earth
- g) Chemistry1050 Foundations of Chemistry I or CHEM 1110 Modern Chemistry I
- h) Forestry 1010 Dendrology I: Tree Identification
- i) One half course in English at first year level

Second Year:

- a) Biology 2210 Introductory Ecology
- b) Philosophy 2013 Environmental Philosophy
- c) Biology 2711 Biology of Microorganisms
- d) Geography 2351 Geomorphology or Geog 3313 Introduction to Soil Science
- e) Geography 2331 Climatology
- f) Forestry 2270 Photogrammetry
- g) Forestry 2054 Aboriginal Peoples and the Forest
- h) Economics 2212 Environmental Economics
- i) Inquiry 203x Inquiry into Environmental Methods
- j) One half course in Statistics (Math 0210 (0.5FCE) or Inquiry 205x Environmental Statistics (0.5 FCE)

Third Year:

- a) Inquiry 301x Environmental Biotechnology
- b) Political Science 3332 Environmental Politics
- c) Biology 3610 Environmental Biology
- d) Inquiry 305X Aquatic Resources Planning and Management
- e) Geography 3471 Environmental Assessment and Management
- f) Inquiry 303x Inquiry into Environmental Conservation
- g) Inquiry 307x Field School in Environmental Sustainability I
- h) 1.5 FCEs elective

Fourth Year:

- a) Inquiry 4010 Honours Seminar
- b) Biology 4710 Limnology
- c) Biology 4711 Applied & Environmental Microbiology
- d) Inquiry 403x Honours research in Environmental Sustainability
- e) Inquiry 401X Field School in Environmental Sustainability II
- f) 2.5 FCEs elective

Admission Requirements

See Requirements for Admission to Undergraduate Degree Programs in the Admission Requirements and Registration section of this Calendar, page 27. Requirements: Grade 12U English and 5 additional Grade 12U or M courses. At least one Grade 12U Science, Biology, Geography or Mathematics credit is recommended.

Academic Regulations

A student may enter, proceed in, and graduate from the HBASc program in accordance with stipulations outlined in the [University Regulations](#).

Co-op Education Option

The program is currently being developed in consultation with the Career & Co-operative Education Services of Lakehead University. The suggested model for the Co-op option is as follows:

- Required work terms in May of year 2, January of year 3, May of year 3, May of year 4
- Optional work term in January of year 5
- Each work term is 4 months in duration

Full details of the Co-op Option will be developed over the upcoming term.

Learner Outcomes for the HBASc In Environmental Sustainability

The HBASc in Environmental sustainability program will deliver theoretical content through lectures and seminars with regular opportunities for practical application through laboratory, field, and community service learning experiences. Faculty and staff will introduce students to an interdisciplinary, inquiry-based learning environment and will require students to engage in group experiences as well as to work independently.

Disciplinary Knowledge Outcomes

Students graduating from the HBASc in Environmental Sustainability will be able to:

- Demonstrate knowledge related to the biological, physical, social, cultural, philosophical and economic determinants of environmental sustainability;
- Describe the origin of Earth and life, principles behind evolution and functioning of microorganisms, plants and animals, and their nomenclature and classification;
- Identify various approaches to ecosystem studies, including the analysis of the interaction between *abiotic* and *biotic* factors in ecosystems and the energy flux between ecosystems;
- Describe natural resources, renewable and non-renewable, and their distribution and need for protection;
- Evaluate the role of Earth's atmosphere and hydrosphere in climatic variation and weather patterns, the existence of life, species distribution, and in soil formation;
- Demonstrate knowledge on the geology and geomorphology of the Earth in relation to species distribution and survival;
- Demonstrate knowledge related to the history and demography of human population and the roles of agricultural and industrial revolutions on human population growth;
- Analyze interactions between human culture and environment, and evaluate the consequences such as the depletion of non-renewable resources, disturbed ecosystems, and over-exploitation of natural resources;
- Demonstrate knowledge of Aboriginal culture and its relationship to the environment;
- Demonstrate knowledge on environmental management, including environmental conservation, roles of various environmental protection agencies, environmental policies and regulations;
- Develop ethically sound solutions to environmental issues.

Interdisciplinary and Professional Skills

Graduates of this program will also demonstrate interdisciplinarity in addressing local, regional and global environmental issues and will be able to:

- Articulate issues in environmental education from an interdisciplinary perspective;
- Synthesize scientifically grounded solutions for natural and anthropogenic environmental destruction;
- Interpret and classify local, regional and global levels of environmental issues, their causes, and the remediation techniques employed;
- Analyze anthropogenic impacts and deterioration of aquatic and terrestrial ecosystems;
- Assess human impacts on climate change, global warming and species invasion;
- Illustrate the need and significance of local, regional and global level environmental protection agencies and their roles in the sustainability of ecosystems;
- Demonstrate ability to prepare reports on environmental issues and present before a variety of stakeholders;
- Develop practical solutions to environmental issues through an inquiry-based approach;
- Use technology and analytical tools to effectively explore the social and physical dimensions of environmental sustainability;

In addition to delivering a student-centered curriculum focused on Environmental Sustainability, the Department is also committed to developing graduates who are able to:

- Demonstrate effective communication skills (written, verbal, and listening) and analytical skills (numeracy, critical thinking, and problem solving);
- Engage effectively with other students in group learning processes;
- Demonstrate ability to statistically analyze data and to analyze both qualitative and quantitative results.

Alignment with the Mission, Academic Plan, and the University Degree Level Expectations

The HBASc in Environmental Sustainability is consistent with the core academic mission of Lakehead University. The integration of the social, ecological, and economic areas of study within the curriculum is designed to develop students who are recognized as leaders in environmental sustainability. The interdisciplinary/inquiry-based approach will systematically address the development of critical thinking skills throughout the curriculum. Community service learning has been incorporated into the curriculum to promote collaboration between students, faculty/staff, and community organizations. Students will be required to address defined community needs and engage in significant reflection and analysis.

The degree level expectations outlined in Ontario Council of Academic Vice-Presidents (OCAV)'s [Guidelines](#) elaborate the intellectual and creative development of students and the acquisition of relevant skills. Lakehead University has adopted the expectations in the six broad categories:

- Depth and Breadth of Knowledge
- Knowledge of Methodologies
- Application of Knowledge
- Communication Skills
- Awareness of Limits of Knowledge
- Autonomy and Professional Capacity

The HBASc in Environmental Sustainability: Program Learner Outcomes clearly address the *Depth and Breadth of Knowledge* expectations at the Honours Baccalaureate degree level. The curriculum will be presented with the depth and breadth to prepare interested students for pursuing postgraduate education in a variety of related disciplines. Required inquiry-based courses will explore selected topics from diverse disciplinary perspectives and students will be taught to apply interdisciplinary strategies to address complex environmental issues.

The proposed program is also designed to prepare students with the professional skills necessary to seek employment as an environmental practitioner. Program outcomes have been expressed that will ensure that the curriculum exceeds expectations related to *Application of Knowledge*. The proposed program is structured using a variety of experiential learning approaches including field school and community service learning. Students will be required to develop effective communication skills, engage in collaborative problem solving, and to develop an appreciation of disciplinary roles and skill sets. Graduates of this program will use an interdisciplinary and inquiry-based approach to address local, regional and global environmental issues and will exceed degree level expectations related to *Communication Skills, Awareness of Limits of Knowledge, Autonomy and Professional Capacity*.

Methods Used to Assess Student Learning and Achievement Of Graduate Outcomes

A variety of assessment methods will be used to evaluate student's achievement of specific course outcomes. These will include, but are not limited to, tests, assignments, formal reports, practical exercises, and the culminating research thesis. A model of *Writing across the Curriculum* is being developed in order to ensure students develop their written communication skills throughout the 4 year curriculum. A structured reflection component will be required in courses that involve community service learning.

“Reflection activities guide students toward discovering, exploring, and evaluating relationships between the course content as they encounter it in readings, lectures, and discussions, and their experiences in the community. Reflection thus ensures service-learning is a dynamic, integrative process that develops students' knowledge, skills, and judgment”. “Reflection *is* critical thinking that supports learning objectives by expecting students to make astute observations, to demonstrate inductive or deductive reasoning skills, and to consider multiple viewpoints, theories, and types of data.”

(Connors, Kara and Sarena D. Seifer. *Interdisciplinary Models of Service-Learning in Higher Education*. Scotts Valley, CA: Learn and Serve America™s National Service-

Learning Clearinghouse, 2005/2008.

http://www.servicelearning.org/instant_info/fact_sheets/he_facts/interdisciplinary/)

Students' post graduation success in acquiring employment, or in pursuing postgraduate education, will be tracked. Students' success in achieving the Canadian Environmental Practitioner Training (CEPIT) certification will also be monitored as one measure of meeting the HBASc program educational objectives.

Peer support and mentoring systems, disciplinary/interdisciplinary clubs and community partnerships will be encouraged and will help to support students enrolled in the program.

Rationale for the Program: A Unique and *Natural* Fit for Orillia

The environmental job market is dynamic and one of the fastest growing sectors of the Canadian economy. Environmental consciousness is increasing locally, nationally, and internationally. The Orillia community is environmentally conscious with an explicit interest in environmental education at the new Orillia campus. Orillia is ideally situated, surrounded by various unique environmental features including The Land Between, Carden Alvars, Algonquin Provincial Park, numerous lakes and significant wetlands. It is a major, provincially designated, recreation area. The proposed program is structured using an inquiry-based approach that provides opportunities for community service learning and takes advantage of the wide variety of diverse regional ecosystems located on the campus doorstep through outdoor field experiences in both pristine and disturbed habitats. The HBASc in Environmental Sustainability Co-op Program has been designed for highly motivated students who wish to increase their knowledge and gain career-related experience.

Importance of an Interdisciplinary and Inquiry Based Approach

In the foreseeable future, the environment job market is predicted to be interdisciplinary in nature (Appendix 1). Growing concerns over environmental destruction and scientific advances demanding interdisciplinary expertise create more opportunities for graduates trained in a well-rounded, comprehensive environmental program. Participants at the Orillia Campus *University Community Colloquium* (April 2008) provided support for continued emphasis on both inquiry-based and interdisciplinary programming.

Participants recommended an increase in opportunities for both experiential and inquiry-based learning. "Learning beyond the classroom or learning that connects the classroom to the world is desirable". The proposed HBASc in Environmental Sustainability includes specific objectives directed to producing an interdisciplinary group of experts in the environmental field who are ready to meet future job market demands.

Importance of Community Service Learning (CSL)

The Canadian Alliance for Community Service-Learning (CACSL) defined Community Service-Learning (CSL) as "an educational approach that integrates service in the community with intentional learning activities". CACSL states that "within effective CSL efforts, members of both educational institutions and community organizations work

together toward outcomes that are mutually beneficial”. The Orillia Colloquium has clearly highlighted that developing partnerships between academic programs and the Simcoe Community will benefit both the students and the community.

Community Service Learning:

- Helps recruit students;
- Increases student retention through increased student engagement;
- Encourages the development of partnerships with community, public and private sector organizations in support of environmental stewardship and sustainability;
- Strengthens the community partnerships and relationships in the Orillia area;
- Creates new interdisciplinary opportunities that give students the flexibility to combine theory and practice in preparation for the demands of the future environment job market;
- Encourages learning in a way that traditional classroom learning cannot.

The location of the Orillia University Campus provides enormous capacity for collaboration with community, government, as well as not-for-profit and private organizations required for CSL (e.g. Ontario Ministry of the Environment, City of Orillia, Lake Simcoe Region Conservation Authority, Kids for Turtles Environmental Education, Couchiching Conservancy etc.). Faculty members at the Orillia Campus have already established mutually beneficial teaching and research relationships with many of these community organizations and have set the stage for building on these existing collaborations to initiate the CSL component of the curriculum. Opportunities for CSL will be woven through the 4-year curriculum.

The Co-op Option – Employment Potential

An initial sample of potential employers, restricted within a 100km radius of Orillia, was identified and contacted (2009) to determine their interests in, and associated requirements for, employing Co-op students enrolled in a HBASc in Environmental Sustainability. The results of the study found that eight out of the 15 employers interviewed expressed an interest in participating in the Co-op component of the proposed program (three are known to hire Co-op students in various capacities but could not be reached for an interview and four were deemed either unsuitable for Co-op placement or were not interested in participating). The results of this preliminary investigation lend support for the Co-op option. (Refer to Appendix 2 for specific information related to the Sample)

Demand: Student & Market

The location of the Orillia campus relative to the Toronto metropolitan area is key to justifying student enrolment targets. In addition, the proposed HBASc in Environmental Sustainability has been designed to attract students and compete against other HBSc or HBA (Appendix 3) programs offered in the Southern Ontario market by providing a unique, interdisciplinary, yet scientifically sound undergraduate program. (As part of the preliminary program development, programs offered in different institutions across

Canada were examined for course requirements and the existence of any innovative features).

4 year enrolment projection (assumption: ~20% attrition yr 2-4)

2010-2011	2011-2012	2012-2013	2013-2014
Year 1	Year 2	Year 3	Year 4
30	24	20	16
	30	30	30
		24	24
			20
30	54	74	90

In developing this proposal, research completed in other constituencies has been considered to help understand the program potential. The Hanover Research Council (Washington, DC, 2009) explored the feasibility of the Northern Illinois University offering undergraduate and graduate degree programs in Environmental Studies. The report provided support based on both student demand for Environmental Studies programs, and based on market demand for individuals with a background in Environmental Studies or related fields. The labour market is believed to be a potential driver for student interest in these programs. The following highlights from the report are considered relevant to the development of the proposed program in Orillia.

- Available labor data suggests that employment demand for individuals with a background in Environmental Studies is increasing at the national, state, and local levels. However, as we discuss further below, due to its interdisciplinary nature, it is difficult to gain a full picture of the growth in jobs available to graduates of these programs.
- Employment projections for Environmental Scientists or Specialists show a 25 percent increase in jobs nationally between 2006 and 2016. This compares with a 10 percent projected increase in employment across all occupations and a 16 percent increase in all professional occupations, indicating that the position is growing at a considerably faster rate than the national average for all occupations. As displayed by the BLS employment projections, openings for environmental scientists and technicians are expected to experience strong growth at the national, state, and local levels. (Appendix 1 presents data compiled by ECO Canada’s 2008 Employer Human Resource Report. It is interesting to note that the Environmental Employers two year projections for growth in environment related positions range from 1.5% up to 11% and 12% for positions in Waste Management and Water Quality).

- Overall, across the United States, Environmental Studies baccalaureate-level degree programs are growing. This is evidenced both by an increasing number of degree completions over the last five years and the creation of new programs.
- Since the degree does not translate neatly into a specific set of careers, it will be important for the program to act as a guide and inform its students of what opportunities are available to them. Further, due to the various skill sets required for these positions, program administrators and faculty, as well as students, should be aware of internship and other experiential learning activities that could help them gain relevant preparation for jobs in this diverse field.

(Environmental Studies Program Demand: Prepared for Northern Illinois University www.niu.edu/envs/resources/Environmental%20Studies%20Program%20Demand.pdf)

Note: This program, like all other programs at the Orillia campus is subject to the program sustainability framework that has been developed as a part of the Orillia Campus Plan 2009-13.

IN SUMMARY, THE PROPOSED HBASC IN ENVIRONMENTAL SUSTAINABILITY IS SUPPORTED BY:

1. The Location of the Orillia Campus:

- Wide variety of diverse regional ecosystems
- Commitment of the Community, link to the campus, academic and enrolment plans

2. Demand:

- Size and population of catchments area – Proximity to Metropolitan Toronto, Southern and Eastern Ontario
- Student interest in environmental education
- The growing number of jobs related to environmental issues

3. The LEED Platinum Campus:

- Hallmark of sustainable and ecologically sensitive development and a centre of research and learning in the environmental sciences

4. The Unique HBASc Degree:

- A scientifically sound interdisciplinary degree, which integrates ecological, social and economic theory and experiences into the curriculum

5. Mode of Program Delivery:

- Inquiry based- student centered learning, focused on developing critical thinking skills

- Experiential learning possibilities through laboratories, field schools, research projects
- Community Service Learning (CSL) - Real world experiences by learning through community engagement in teaching and workshops. CSL can encourage learning in a way that traditional classroom learning cannot.

6. Co-operative Education:

- An option for career centered learning

7. Option to study in another educational institution (international, national, or provincial in that order) for a given period of time.

National Accreditation & Value Added

The Canadian Environmental Accreditation Commission (CEAC) provides a voluntary accreditation process that evaluates environmental programs offered at Canadian post-secondary educational institutions. The Canadian Environmental Certification Approvals Board (CECAB) is ECO Canada's certifying body. The incorporation of National (CEAC) Accreditation and the Canadian Environmental Practitioner – in – training (CEPIT) certification will be considered once the program is launched to increase value added (CEAC is a standing committee of ECO Canada, Students may apply for the CEPIT designation during their final year of study).

The Canadian University Environmental Science Network (CUESN) guidelines are followed by the Environmental Careers Organization of Canada (ECO Canada) to undertake and award accreditation to suitably qualified programs. These guidelines (http://cuesn-rcuse.org/index.cfm?page=en_accreditation) have been considered in the design of the curriculum for HBASc in Environmental Sustainability.

Benefits of accreditation:

- Increases enrolment
- Offers an objective measure of a program
- Facilitates school - to - work transitions for graduates
- Provides a framework for continuous qualitative improvement of the program

Resource Planning

All resource planning for the Orillia campus is guided by the Academic Charter recommended by the Strategic Plan 2005 – 2010 (page 4):

- All students should have equal opportunity to study in learning environments that are funded sufficiently to meet prevailing disciplinary standards;

- All full-time faculty should have workloads and resources that provide them with equal opportunity to meet their teaching, research, and administrative obligations;
- All Senate approved programs, as well as the Library and Part-Time Studies, should have funding sufficient for them to meet disciplinary standards, and where applicable, accreditation requirements.

Appropriate human and physical resources will be included in the Orillia Campus budget in order to develop and sustain the proposed HBASc in Environmental Sustainability. It is important to note that the Orillia campus budget includes revenue (based upon established enrolment targets), as well as all expenditures (e.g. salaries, all instructional costs, all utilities, building leases, capital improvements, borrowing costs etc.). The Orillia campus is also charged 18% of its operating budget for central services (e.g. finance, human resources, student services, TSC etc.) and is expected to meet an annual surplus target. In 2008/9, after meeting all expenses, inclusive of a 6% budget reduction, the Orillia campus returned approximately 950k to the University. The Orillia campus receives no carry forward.

Human Resources

While much of the faculty resources needed to deliver the program are already available within the current complement, additional expertise (both full-time and part-time) will be required and will be phased in over the first four years of the program. A four-year staffing plan for the entire campus is currently in development, and, as is the case with other academic units at both campuses, approval will be sought and the plan will be implemented through the existing annual budget processes.

Currently, the campus has approximately seven faculty positions that will be contributing to the delivery of courses within the program. Other faculty resources will be required in accordance with budget guidelines above.

We also anticipate that colleagues at the Thunder Bay campus will continue to collaborate with us in the delivery of course at the Orillia campus, through e-learning (in both directions), modular courses, and short term residencies.

Also, given our location near to the GTA and our proximity to other southern Ontario universities, we have had considerable success in attracting appropriately credentialed expertise to meet our need for part-time instructors, and we will draw on these as needed to teach specific courses where the expertise is not available in house.

Physical Resources

The laboratory and classroom facilities at the Heritage Place site and the new Academic building (currently on schedule for completion in August 2010) will meet the needs of the program (see attached floor plans).

As we have with other programs offered at the campus, physical resources (equipment, instructional supplies etc.) will be secured to support the program through the annual budget processes. Consistent with the Orillia campus budget model, we will not be

seeking any funds to support this program from the University's central academic or physical resources budgets.

Request for Calendar Change Form

Tracking No:
(Senate Secretary's Office
use only)

Date:
20/11/2009

To	Secretary of Senate	
From	Name(Dean):	Faculty
	<u>Dr. Kim Fedderson</u>	<u>Lakehead University- Orillia Campus</u>
	Department the change relates to	
	<u>Department of Interdisciplinary Studies</u>	
	Contact Person	
	<u>Dr. Alice den Otter</u>	

Is the proposed calendar change Undergraduate

Instructions:

1. In all cases please complete and attach section 1 and 2
2. If the calendar change affect other departments/schools/faculties complete and attach section 3
3. If the answer to any of the questions below is yes, explain. Attach separate sheets with reference to the question

- | | | |
|--|--|---|
| 1. Do the proposed changes affect other departments/ schools/faculties in terms of their calendar change? | Yes
<input type="checkbox"/> | No
<input checked="" type="checkbox"/> |
| 2. Is a transition plan needed for student in progress? | Yes
<input type="checkbox"/> | No
<input checked="" type="checkbox"/> |
| 3. Are the proposed changes likely to affect student enrollment in your department/school/faculty? | Yes
<input checked="" type="checkbox"/> | No
<input type="checkbox"/> |
| 4. Are the proposed changes likely to affect student enrollment in other departments/schools/faculties at Lakehead University? | Yes
<input type="checkbox"/> | No
<input checked="" type="checkbox"/> |
| 5. Will the proposed changes require additional teaching space and/or teaching staff and/or equipment and/or other resources? | Yes
<input checked="" type="checkbox"/> | No
<input type="checkbox"/> |
| 6. Will the proposed changes affect existing teaching loads within your department/school/faculty? | Yes
<input type="checkbox"/> | No
<input checked="" type="checkbox"/> |
| 7. Will the proposed changes increase demand for teaching support services such as the library, computing services and technical staff ? | Yes
<input checked="" type="checkbox"/> | No
<input type="checkbox"/> |
| 8. Will the proposed change require direct or in-kind support from outside the academic unit? | Yes
<input type="checkbox"/> | No
<input checked="" type="checkbox"/> |
| 9. Do the proposed changes include change in course(s) which is/are required core course(s) for a major? | Yes
<input type="checkbox"/> | No
<input checked="" type="checkbox"/> |
| 10. Do the proposed changes include a change in course which is | Yes | No |

- service/required course(s) in another program? Yes No
11. Do the proposed changes include change in course(s) which is/are open elective available to any student in any program? Yes No
12. Do the proposed changes include change in course(s) which is/are elective in a major i.e. restricted to students in a major? Yes No

Signatures:

Date approved by faculty council

19/11/2009

Section 1

Description of the Proposed Calendar Change:

Addition of a major in Environmental Sustainability to HBASc

Rationale of the Proposed Calendar Change(s):

(Corresponding to Section 2 where required)

Rationale for the Program: A Unique and Natural Fit for Orillia

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part of the vision for the LEED Platinum Campus.

Section 2

Existing Calendar Entries:
(Page reference based on hard copy or URL based on electronic version of calendar)

Proposed Calendar Entries/Addition/ Deletion
-If only addition, specify page number and placement in university calendar
-If only deletion, write Deleted

<http://mycoursecalendar.lakeheadu.ca/pg618.html>

ADMISSION REQUIREMENTS
See Requirements for Admission to Undergraduate Degree Programs in the Admission Requirements and Registration section of this Calendar, page 33.
Requirements: Grade 12U English and 5 additional Grade 12U or M courses. At least one Grade 12U Science, Geography or Mathematics credit is recommended.
Students will be admitted directly into the HBASc, the HBASc/BEd or the BASc/BEd. They will not be admitted directly into the BASc Multidisciplinary Studies.

ADMISSION REQUIREMENTS
See Requirements for Admission to Undergraduate Degree Programs in the Admission Requirements and Registration section of this Calendar, page 33 (<http://bolt.lakeheadu.ca/~calendar/draft-nextyear/contents/admissions/admdegr.html>).
Requirements: Grade 12U English and 5 additional Grade 12U or M courses. At least one Grade 12U Science, Biology, Geography or Mathematics credit is recommended. Students will be admitted directly into the HBASc, the HBASc/BEd or the BASc/BEd. They will not be admitted directly into the BASc Multidisciplinary Studies.

<http://mycoursecalendar.lakeheadu.ca/pg618.html>

ACADEMIC REGULATIONS
A student may enter, proceed in, and graduate from the HBASc program in accordance with stipulations of the University Regulations and those stipulated below. HBASc/BEd and BASc/BEd programs are also subject to regulations of the Faculty of Education. A student may be allowed to graduate from the BASc, with the permission of the Dean of the Orillia Campus.

ACADEMIC REGULATIONS
A student may enter, proceed in, and graduate from the HBASc program in accordance with stipulations of the University Regulations and those stipulated below. HBASc/BEd and BASc/BEd programs are also subject to regulations of the Faculty of Education. A student may be allowed to graduate from the BASc, with the permission of the Dean of the Orillia Campus.

<http://mycoursecalendar.lakeheadu.ca/pg618.html>

The Department of Interdisciplinary Studies offers programs leading to the following degrees:

HBASc (Interdisciplinary Studies Major)
Four year program

HBASc (Anthropology Major)
Four year program

The Department of Interdisciplinary Studies offers programs leading to the following degrees:

HBASc (Interdisciplinary Studies Major)
Four year program

HBASc (Anthropology Major)
Four year program

HBASc (English Major)
Four year program

HBASc (Geography Major)
Four year program

BASc (Interdisciplinary Studies Major)
Three year program
(Access to his program requires permission of the Campus Dean)

Each of the above programs may be combined with the BEd Primary-Junior Specialization concurrent program (see the Faculty of Education, Department of Undergraduate Studies in Education, concurrent honours bachelor degree programs).

HBASc, BEd (Interdisciplinary Studies Major) P/J (Five year program)

HBASc, BEd (Anthropology Major) P/J (Five year program)

HBASc, BEd (English Major) P/J (Five year program)

HBASc, BEd (Geography Major) P/J (Five year program)

BASc, BEd (Interdisciplinary Studies Major) P/J (Four year program)

The Honours Bachelor of Arts and Sciences degree, the Honours Bachelor of Arts and Sciences/Bachelor of Education P/J, and the Bachelor of Arts and Sciences/Bachelor of Education P/J provide students with the option of focusing their studies in various ways within Areas I and II below.

Foundation of Interprofessional Health Studies

A particular slate (5 FCEs) of courses taken within the first year of the HBASc, called the Foundation of Interprofessional Health Studies, will be of interest to those students wishing to explore career opportunities within the health sector. Upon successful completion of first year, students may apply to transfer into the Thunder Bay campus programs in Gerontology, Kinesiology, Nursing or Social Work. Alternatively, students may wish to continue with the HBASc which in itself provides a broad interdisciplinary grounding to other health careers.

The slate of courses consists of the following:

1. Instead of Inquiry 1010/1030, students will take Inquiry 1010/1035.
2. In place of the 2 FCE SSH/SES electives

HBASc (English Major)
Four year program

HBASc (Geography Major)
Four year program

HBASc (Environmental Sustainability Major)

BASc (Interdisciplinary Studies Major)
Three year program
(Access to this program requires permission of the Campus Dean)

Most of the above programs may be combined with the BEd Primary-Junior Specialization concurrent program (see the Faculty of Education, Department of Undergraduate Studies in Education, concurrent honours bachelor degree programs).

HBASc, BEd (Interdisciplinary Studies Major) P/J (Five year program)

HBASc, BEd (Anthropology Major) P/J (Five year program)

HBASc, BEd (English Major) P/J (Five year program)

HBASc, BEd (Geography Major) P/J (Five year program)

BASc, BEd (Interdisciplinary Studies Major) P/J (Four year program)

Note: Concurrent Education option is not available with the HBASc (Environmental Sustainability Major).

The Honours Bachelor of Arts and Sciences degree, the Honours Bachelor of Arts and Sciences/Bachelor of Education P/J, and the Bachelor of Arts and Sciences/Bachelor of Education P/J provide students with the option of focusing their studies in various ways within Areas I and II below.

Foundation of Interprofessional Health Studies

A particular slate (5 FCEs) of courses taken within the first year of the HBASc, called the Foundation of Interprofessional Health Studies, will be of interest to those students wishing to explore career opportunities within the health sector. Upon successful completion of first year, students may apply to transfer into the Thunder Bay campus programs in Gerontology, Kinesiology, Nursing or Social Work. Alternatively, students may wish to continue with the HBASc which in itself provides a broad interdisciplinary grounding to other health

and the 2 FCE open electives, students take the required courses:

Biology 2020

Chemistry 1210

Kinesiology 1113, and

Two of: Psychology 1100, Gerontology 1100 or Social Work 1100.

Area I

Courses included in the following disciplines:

Anthropology (any not included in the Department of Anthropology list of Arts/Science Credit courses)

Economics

English

Geography (any not included in the Department of Geography list of Arts/Science Credit courses)

History

Indigenous Learning

Languages

Music

Philosophy

Political Science

Psychology (Core Group C and D courses)

Religious Studies

Sociology

Visual Arts

Women's Studies

Area II

Courses included in the following disciplines:

Anthropology (courses included in the Department of Anthropology list of Arts/Science Credit courses)

Biology

Chemistry

Computer Science

Geography (courses included in the Department of Geography list of Arts/Science Credit courses)

Geology

Mathematics

Physics

Psychology (Core Group A and B courses)

Area III

Courses included in the following disciplines:

Business

Education

Forestry

Gerontology

Kinesiology

Outdoor Recreation

Social Work

careers.

The slate of courses consists of the following:

1. Instead of Inquiry 1010/1030, students will take Inquiry 1010/1035.

2. In place of the 2 FCE SSH/SES electives and the 2 FCE open electives, students take the required courses:

Biology 2020

Chemistry 1210

Kinesiology 1113, and

Two of: Psychology 1100, Gerontology 1100 or Social Work 1100.

Area I

Courses included in the following disciplines:

Anthropology (any not included in the Department of Anthropology list of Arts/Science Credit courses)

Economics

English

Geography (any not included in the Department of Geography list of Arts/Science Credit courses)

History

Indigenous Learning

Languages

Music

Philosophy

Political Science

Psychology (Core Group C and D courses)

Religious Studies

Sociology

Visual Arts

Women's Studies

Area II

Courses included in the following disciplines:

Anthropology (courses included in the Department of Anthropology list of Arts/Science Credit courses)

Biology

Chemistry

Computer Science

Geography (courses included in the Department of Geography list of Arts/Science Credit courses)

Geology

Mathematics

Physics

Psychology (Core Group A and B courses)

Area III

Courses included in the following disciplines:

Business
Education
Forestry
Gerontology
Kinesiology
Outdoor Recreation
Social Work

PROGRAM REGULATIONS

1. A student who successfully completes the courses as indicated in his/her program of study will have his/her year level incremented as follows:

Year 1 = < 4 full course equivalents

Year 2 = 4 to < 9 full course equivalents

Year 3 = 9 to < 14 full course equivalents

Year 4 = 14 >

2. Students in the HBASc (Interdisciplinary Studies) are required to satisfactorily complete a minimum of two disciplinary specializations (a specialization comprises a set of 5 FCE in a discipline). These specializations must be identified by the student prior to entering the third year of the program. Changes in specialization after the third year require the permission of the Chair of Interdisciplinary Studies.

3. A specialization comprises a minimum of five FCE (full course equivalent) courses from a discipline in Area I or II. Students should consult with an academic advisor as to which disciplines are most suitable as areas of specialization.

4. To meet Interdisciplinary requirements for the HBASc, a student choosing two specializations in Area I must satisfactorily complete at least 3 FCEs in Area II. Alternatively, a student choosing two specializations in Area II must satisfactorily complete at least 3 FCEs in Area I.

5. Alternately, students in the HBASc disciplinary major programs are required to satisfactorily complete a major in one of the following disciplines: Anthropology, English, or Geography (a major comprises a set of 10 FCEs in a discipline, including several core requirements). Majors must be identified by students prior to entering the third year of each program. Changes in program after the

PROGRAM REGULATIONS

1. A student who successfully completes the courses as indicated in his/her program of study will have his/her year level incremented as follows:

Year 1 = < 4 full course equivalents

Year 2 = 4 to < 9 full course equivalents

Year 3 = 9 to < 14 full course equivalents

Year 4 = 14 >

2. Students in the HBASc (Interdisciplinary Studies) are required to satisfactorily complete 20 FCEs, including a minimum of two disciplinary specializations (a specialization comprises a set of 5 FCE in a discipline). These specializations must be identified by the student prior to entering the third year of the program. Changes in specialization after the third year require the permission of the Chair of Interdisciplinary Studies.

3. A specialization comprises a minimum of five FCE (full course equivalent) courses from a discipline in Area I or II. Students should consult with an academic advisor as to which disciplines are most suitable as areas of specialization.

4. To meet Interdisciplinary requirements for the HBASc, a student must satisfactorily complete at least 3 FCEs in Area I and at least 3 FCEs in Area II.

5. Students in the HBASc disciplinary major programs are required to satisfactorily complete 20 FCEs, including a major in one of the following disciplines: Anthropology, English, or Geography (a major comprises a set of 10 FCEs, including

third year require the permission of the Campus Dean.

6. All students in the Department of Interdisciplinary Studies programs at the Orillia campus will satisfactorily complete a required 1 FCE in first year Inquiry.

7. All students in the HBASc will satisfactorily complete a required 1 FCE course in fourth year Inquiry. Note: Inquiry 4010/4030 is restricted to students in the HBASc or HBASc/BEc programs.

8. Additional FCE electives must be selected from Area I or Area II.

9. Two FCE "Open Electives" may be taken from any faculty (practicum, clinical and co-op credits are not eligible). Students should consult with an academic advisor prior to making their course selection in this category. In the case of the concurrent Education programs, the two "open electives" are specified as Education courses, but for students in the HBASc, courses from any of the professional disciplines (Area III) may be eligible.

10. A maximum of seven (7) FCE first year or zero level courses may be satisfactorily completed and counted towards the HBASc or BASc degrees.

11. At least five (5) FCE courses must be satisfactorily completed at the third year level or above for the HBASc (Interdisciplinary Studies).

12. The last five (5) FCE courses must be taken while registered in the HBASc or BASc programs except with permission of the Chair of Interdisciplinary Studies. For students in the concurrent Education programs, the last 5.5 courses constitute studies in the Professional Year.

13. An HBASc student who has not met the requirement of a cumulative B average (70%) may be permitted, with reasonable expectation of success and with the approval of the Chair of Interdisciplinary Studies, to proceed on probation into the succeeding

several core requirements). Majors must be identified by students prior to entering the third year of each program. Changes in program after the third year require the permission of the Campus Dean.

6. Students in the HBASc Environmental Sustainability Major are required to satisfactorily complete 20 FCEs, including 16 FCEs core requirements in Environmental Sustainability.

7. All students in the Department of Interdisciplinary Studies programs at the Orillia campus will satisfactorily complete a required 1 FCE in first year Inquiry.

8. All students in the HBASc will satisfactorily complete a required 1 FCE course in fourth year Inquiry. Note: Inquiry 4010/4030 is restricted to students in the HBASc or HBASc/BEc programs.

9. Additional FCE electives must be selected from Area I or Area II.

10. Two FCE "Open Electives" may be taken from any faculty (practicum, clinical and co-op credits are not eligible). Students should consult with an academic advisor prior to making their course selection in this category. In the case of the concurrent Education programs, the two "open electives" are specified as Education courses, but for students in the HBASc, courses from any of the professional disciplines (Area III) may be eligible.

11. A maximum of seven (7) FCE first year or zero level courses may be satisfactorily completed and counted towards the HBASc or BASc degrees.

12. At least five (5) FCE courses must be satisfactorily completed at the third year level or above for the HBASc.

13. The last five (5) FCE courses must be taken while registered in the HBASc or BASc programs except with permission of the Chair of Interdisciplinary Studies. For students in the concurrent Education programs, the last 5.5

year of his/her program. Should he/she fail to obtain the required average a second time, he/she must apply to transfer to another program. Admission to the BASc may only be permitted with special permission of the Orillia Campus Dean or the Dean's designate.

14. To graduate with the HBASc (Interdisciplinary Studies) or to enter the Professional Year of the HBASc/BEd, a student must have a minimum cumulative grade average of 70%. To graduate with an HBASc disciplinary major, a student must have a minimum cumulative grade average of 70% in courses pertaining to that major. To graduate from the BASc, a student must have a minimum cumulative grade average of 60%. The exit average for the BASc/BEd is 65% in the Professional Year (see the Department of Undergraduate Studies in Education Academic Regulations).

courses constitute studies in the Professional Year.

14. An HBASc student who has not met the requirement of a cumulative B average (70%) may be permitted, with reasonable expectation of success and with the approval of the Chair of Interdisciplinary Studies, to proceed on probation into the succeeding year of his/her program. Should he/she fail to obtain the required average a second time, he/she must apply to transfer to another program. Admission to the BASc may only be permitted with special permission of the Orillia Campus Dean or the Dean's designate.

15. To graduate with the HBASc (Interdisciplinary Studies) or to enter the Professional Year of the HBASc/BEd, a student must have a minimum cumulative grade average of 70%. To graduate with an HBASc disciplinary major, a student must have a minimum cumulative grade average of 70% in courses pertaining to that major. To graduate with an HBASc in Environmental Sustainability, a student must have a minimum cumulative grade average of 70% in core courses. To graduate from the BASc, a student must have a minimum cumulative grade average of 60%. The exit average for the BASc/BEd is 65% in the Professional Year (see the Department of Undergraduate Studies in Education Academic Regulations).

<http://mycoursecalendar.lakeheadu.ca/pg620.html>

Interdisciplinary Studies Programs
1. Honours BASc (Interdisciplinary Studies Major)
Four Year program

First Year:
(a) Inquiry 1010 and 1030
(b) One FCE (full course equivalent) in first area of specialization
(c) One FCE in second area of specialization
(d) One FCE in Area I if both specializations are in Area II or One FCE in Area II if both specializations are in Area I or One FCE from any Area if specializations are in different areas
(e) One FCE elective

Second Year:

Interdisciplinary Studies Programs
1. Honours BASc (Interdisciplinary Studies Major)
Four Year program

First Year:
(a) Inquiry 1010 and 1030
(b) One FCE (full course equivalent) in first area of specialization
(c) One FCE in second area of specialization
(d) One FCE in Area I if both specializations are in Area II or One FCE in Area II if both specializations are in Area I or One FCE from any Area if specializations are in different areas
(e) One FCE elective

- (a) Two FCEs in first area of specialization at second year level
- (b) Two FCEs in second area of specialization at second year level
- (c) One FCE in Area I if both specializations are in Area II or One FCE in Area II if both specializations are in Area I or One FCE from any Area if specializations are in different areas

Third Year:

- (a) One FCE in first area of specialization at third or fourth year level
- (b) One FCE in second area of specialization at third or fourth year level
- (c) One FCE in Area I if both specializations are in Area II or One FCE in Area II if both specializations are in Area I or One FCE from any Area if specializations are in different areas
- (d) Two FCE electives

Fourth Year:

- (a) Inquiry 4010 and 4030
- (b) One FCE in first area of specialization at third or fourth year level
- (c) One FCE in second area of specialization at third or fourth year level
- (d) Two FCE electives

**2. Honours BAsc (Anthropology Major)
Four Year program**

First Year:

- (a) Anthropology 1032 and 1034
- (b) Inquiry 1010 and 1030
- (c) One FCE (full course equivalent) in English (any combination of English 1101, 1031, 1111, or 1112)
- (d) One FCE in Area II
- (e) One FCE elective

Second Year:

- (a) Anthropology 2110, 2112, 2137, 2515, 2517
- (b) Anthropology 2151
- (c) One FCE in Area II
- (d) One FCE elective

Third Year:

- (a) Two FCEs from Anthropology 3010, 3118, 3231, 3315, 3815, 3817, 4219, or 4450
- (b) One additional FCE in Anthropology at the third year level
- (c) Two FCE electives

Fourth Year:

Second Year:

- (a) Two FCEs in first area of specialization at second year level
- (b) Two FCEs in second area of specialization at second year level
- (c) One FCE in Area I if both specializations are in Area II or One FCE in Area II if both specializations are in Area I or One FCE from any Area if specializations are in different areas

Third Year:

- (a) One FCE in first area of specialization at third or fourth year level
- (b) One FCE in second area of specialization at third or fourth year level
- (c) One FCE in Area I if both specializations are in Area II or One FCE in Area II if both specializations are in Area I or One FCE from any Area if specializations are in different areas
- (d) Two FCE electives

Fourth Year:

- (a) Inquiry 4010 and 4030
- (b) One FCE in first area of specialization at third or fourth year level
- (c) One FCE in second area of specialization at third or fourth year level
- (d) Two FCE electives

**2. Honours BAsc (Anthropology Major)
Four Year program**

First Year:

- (a) Anthropology 1032 and 1034
- (b) Inquiry 1010 and 1030
- (c) One FCE (full course equivalent) in English (any combination of English 1101, 1031, 1111, or 1112)
- (d) One FCE in Area II
- (e) One FCE elective

Second Year:

- (a) Anthropology 2110, 2112, 2137, 2515, 2517
- (b) Anthropology 2151
- (c) One FCE in Area II
- (d) One FCE elective

Third Year:

- (a) Two FCEs from Anthropology 3010, 3118, 3231, 3315, 3815, 3817, 4219, or 4450
- (b) One additional FCE in Anthropology at the

- (a) Two FCEs in Anthropology at the fourth year level
- (b) Inquiry 4010 and 4030
- (c) One FCE elective

3. Honours BAsc (English Major)
Four Year program

First Year:

- (a) English 1111 and 1112
- (b) Inquiry 1010 and 1030
- (c) One FCE (full course equivalent) in Area II
- (d) Two FCE electives

Notes:

1. Students contemplating graduate work should consider language courses among their options.
2. English 1111 and English 1112 may be taken in either order.

Second Year:

- (a) English 2903
- (b) One other FCE in English at the second year level (English 2038 does not count for purposes of fulfilling this requirement)
- (c) One FCE in English (English 1074, 1807 and 2038 do not count for purposes of fulfilling this requirement.)
- (d) One FCE in Area II
- (e) One FCE elective

Note:

Students who may wish to continue into an Honours BA program, should take English 2903.

Third Year:

- (a) Two FCEs in English at the third year level (including one FCE from English Area A)
- (b) One FCE in English at the third or fourth-year level
- (c) One FCE in Area II
- (d) One FCE elective

Fourth Year:

- (a) One FCE in English at the fourth year level
- (b) Two FCEs in English at the third or fourth-year level (including one half-course from English Area A)
- (c) Inquiry 4010 and 4030
- (d) One FCE elective at the third or fourth-year level

Note:

Students contemplating graduate work in English are strongly encouraged to take English 4914 and/or English 4916.

third year level

- (c) Two FCE electives

Fourth Year:

- (a) Two FCEs in Anthropology at the fourth year level
- (b) Inquiry 4010 and 4030
- (c) One FCE elective

3. Honours BAsc (English Major)
Four Year program

First Year:

- (a) English 1111 and 1112
- (b) Inquiry 1010 and 1030
- (c) One FCE (full course equivalent) in Area II
- (d) Two FCE electives

Notes:

1. Students contemplating graduate work should consider language courses among their options.
2. English 1111 and English 1112 may be taken in either order.

Second Year:

- (a) English 2903
- (b) One other FCE in English at the second year level (English 2038 does not count for purposes of fulfilling this requirement)
- (c) One FCE in English (English 1074, 1807 and 2038 do not count for purposes of fulfilling this requirement.)
- (d) One FCE in Area II
- (e) One FCE elective

Note:

Students who may wish to continue into an Honours BA program, should take English 2903.

Third Year:

- (a) Two FCEs in English at the third year level (including one FCE from English Area A)
- (b) One FCE in English at the third or fourth-year level
- (c) One FCE in Area II
- (d) One FCE elective

Fourth Year:

- (a) One FCE in English at the fourth year level
- (b) Two FCEs in English at the third or fourth-year level (including one half-course from English Area

4. Honours BAsc (Geography Major)
Four Year program

First Year:

- (a) Geography 1120
- (b) Inquiry 1010 and 1030
- (c) One FC in Area II (Geography excluded)
- (d) One FCE in Area I
- (e) One FCE elective (Area II recommended)

Second Year:

- (a) Geography 2211, 2251, 2271, 2331, 2351, 2511, 2811
- (b) One FCE in Area I
- (c) One half-course elective

Third Year:

- (a) Geography 3251 or 3253
- (b) Two FCEs in Geography at the third year level
- (c) One FCE in Area I
- (d) One FCE elective (Area II recommended)
- (e) One half-course elective

Fourth Year:

- (a) Three FCEs in Geography at the fourth-year level
- (b) Inquiry 4010 and 4030
- (c) One FCE elective

A)

- (c) Inquiry 4010 and 4030
- (d) One FCE elective at the third or fourth-year level

Note:

Students contemplating graduate work in English are strongly encouraged to take English 4914 and/or English 4916.

4. Honours BAsc (Geography Major)
Four Year program

First Year:

- (a) Geography 1120
- (b) Inquiry 1010 and 1030
- (c) One FC in Area II (Geography excluded)
- (d) One FCE in Area I
- (e) One FCE elective (Area II recommended)

Second Year:

- (a) Geography 2211, 2251, 2271, 2331, 2351, 2511, 2811
- (b) One FCE in Area I
- (c) One half-course elective

Third Year:

- (a) Geography 3251 or 3253
- (b) Two FCEs in Geography at the third year level
- (c) One FCE in Area I
- (d) One FCE elective (Area II recommended)
- (e) One half-course elective

Fourth Year:

- (a) Three FCEs in Geography at the fourth-year level
- (b) Inquiry 4010 and 4030
- (c) One FCE elective

5. Honours BAsc (Environmental Sustainability Major) – Non Co-Op
Four Year Program

First Year:

- (a) Biology 1110
- (b) Geography 1120
- (c) Biology 1130
- (d) Inquiry 1010
- (e) Inquiry 103X
- (f) GEOL 1130

- (g) CHEM 1110 or CHEM 1050
- (h) Forestry 1010
- (i) One half course in English at first year level

Second Year:

- (a) Biology 2210
- (b) Philosophy 2013
- (c) Biology 2711
- (d) Geography 2351 or Geog 3313
- (e) Geography 2331
- (f) Forestry 2270
- (g) Forestry 2054
- (h) ECON 2212
- (i) Inquiry 203x
- (j) One half course in Statistics
(To be decided: MATH 2321 is preferable, but it is a 1FCE course. Is Math 0210 (0.5FCE) of sufficient calibre, or do we need to create INQ 205x Environmental Statistics (0.5FCE) to satisfy the statistics requirement?)

Third Year:

- (a) Inquiry 301x
- (b) POLSCI 3332
- (c) Biology 3610
- (d) Inquiry 305X
- (e) Geog 3471
- (f) Inquiry 303x
- (g) Inquiry 307x
- (h) 1.5 FCEs Elective

Fourth Year:

- (a) Inquiry 4010
- (b) Biology 4710
- (c) Biology 4711
- (d) Inquiry 403x
- (e) Inquiry 401X
- (f) 2.5 FCEs Elective

6.. Honours BAsc (Environmental Sustainability Major) –Co-Op
Five Year Program

Continuation in the Co-op option will be contingent on maintaining a weighted average of 70% in each term. A Co-op student who obtains less than a 70% average for the course work of any term or who fails any course may be placed on probation for the following academic term. A student who does not remove the probationary standing within the designated period will be dismissed from the Co-op option. A Co-op student who fails the year (see appropriate academic regulations) will be dismissed from the Co-op option. Work term

credits are not applicable towards the completion of the regular HBSc Environmental Sustainability degree.

Graduation from the Co-operative Option of the HBASc in Environmental Sustainability Major requires, in addition to all academic requirements, satisfactory completion of INQ 19xx, 29xx, 39xx and 49xx (see course descriptions for further details).

Students in the Co-op option are not guaranteed work term positions. Placements are posted in the Employment and Co-operative Education Centre; students must apply. Employers make decisions on a competitive basis.

First Year (Term 1 Fall, Term 2 Winter)

First Year:

- (a) Biology 1110
- (b) Geography 1120
- (c) Biology 1130
- (d) Inquiry 1010
- (e) Inquiry 103X
- (f) GEOL 1130
- (g) CHEM 1110 or CHEM 1050
- (h) Forestry 1010
- (i) One half course in English at first year level

Second Year (Term 3 Fall, Term 4 Winter)

Second Year:

- (a) Biology 2210
- (b) Philosophy 2013
- (c) Biology 2711
- (d) Geography 2351 or Geog 3313
- (e) Geography 2331
- (f) Forestry 2270
- (g) Forestry 2054
- (h) ECON 2212
- (i) Inquiry 203x
- (j) One half course in Statistics

(To be decided: MATH 2321 is preferable, but it is a 1FCE course. Is Math 0210 (0.5FCE) of sufficient calibre, or do we need to create INQ 205x Environmental Statistics (0.5FCE) to satisfy the statistics requirement?)

Second Year (Term 5 Summer)

- (a) Inquiry 19xx (Co-op)

Third Year (Term 6 Fall)

- (a) Inquiry 301x

5. BAsc (Interdisciplinary Studies Major)
Three Year program

First Year:

- (a) Inquiry 1010 and 1030
- (b) One FCE (full course equivalent) in area of specialization
- (c) One FCE in Area I if specialization is in Area II or One FCE in Area II if specialization is in Area I
- (d) Two FCE electives

Second Year:

- (a) Two FCEs in area of specialization at second year level
- (b) One FCE in Area I if specialization is in Area II or One FCE in Area II if specialization is in Area I
- (c) Two FCE electives

Third Year:

- (a) Two FCEs in area of specialization at third or fourth-year level
- (b) One FCE in Area I if specialization is in Area II or One FCE in Area II if specialization is in Area I
- (c) Two FCE electives

6. Concurrent Programs with Education

A. Each of the HBAsc degrees (Interdisciplinary Studies, Anthropology, English, Geography majors) is offered concurrently with a Bachelor of Education degree. Prior to the Professional Year, students should follow the HBAsc program requirements; however, they should also include the prior to entry into the Professional Year requirements of the Primary-Junior Specialization. For more information about concurrent programs, see the Faculty of Education, Department of Undergraduate Studies in Education.

Note:

For students in concurrent honours bachelor degree programs, 1.5 FCEs of required Education courses (Education 4410, 4412, 4413, 4416, and a quarter-course Education elective - students should consult the Timetable) will be taken instead of electives in the HBAsc program, prior to entering the Professional Year.

- (b) POLSCI 3332
- (c) Biology 3610
- (d) Inquiry 305X
- (e) Inquiry 4010

Third Year (Term 7 Winter, Term 8 Summer)

- (a) Inquiry 29xx (Co-op)
- (b) Inquiry 39xx (Co-op)

Fourth Year (Term 9 Fall)

- (a) Inquiry 303x
- (b) Inquiry 307x
- (c) 1.5 FCEs Elective

Fourth Year (Term 10 Winter)

- (a) Biology 4711
- (b) Inquiry 403x
- (c) 1.5 FCE elective

Fourth Year (Term 11 Summer)

- (a) Inquiry 49xx (Co-op)

Fifth Year (Term 12 Fall)

- (a) Geog 3471
- (b) Biology 4710
- (c) Inquiry 401X
- (d) 1.0 FCEs Elective

Fifth Year (Optional work term: Term 13 Winter)

7. BAsc (Interdisciplinary Studies Major)

Three Year program

First Year:

- (a) Inquiry 1010 and 1030
- (b) One FCE (full course equivalent) in area of specialization
- (c) One FCE in Area I if specialization is in Area II or One FCE in Area II if specialization is in Area I
- (d) Two FCE electives

Second Year:

- (a) Two FCEs in area of specialization at second year level
- (b) One FCE in Area I if specialization is in Area II or One FCE in Area II if specialization is in Area I
- (c) Two FCE electives

Third Year:

- (a) Two FCEs in area of specialization at third or fourth-year level

B. The BAsc (Interdisciplinary Studies) 3-year degree is offered concurrently with a Bachelor of Education (Primary-Junior Specialization only) degree. For more information about concurrent programs, see the Faculty of Education, Department of Undergraduate Studies in Education.

BAsc, BEd (Interdisciplinary Studies) P/J
Four Year program

A cumulative average of 65% in all courses is required. See regulation #2, page 67, regarding the average in the major.

First Year:

- (a) Inquiry 1010 and 1030
- (b) One FCE (full course equivalent) in area of specialization
- (c) One FCE in Area I if specialization is in Area II or One FCE in Area II if specialization is in Area I
- (d) Two FCE electives

Note:

See the Department of Undergraduate Studies in Education, Concurrent Education Programs, Concurrent Content Regulations, for information regarding Mathematics or Science Electives, Music or Visual Arts Requirement, and Canadian Content requirements.

Second Year:

- (a) Two FCEs in area of specialization at second year level
- (b) One FCE in Area I if specialization is in Area II or One FCE in Area II if specialization is in Area I
- (c) One FCE elective at second year level
- (d) Education Second Year P/J Core Courses.

Third Year:

- (a) Two FCEs in area of specialization at third or fourth year level
- (b) One FCE in Area I if specialization is in Area II or One FCE in Area II if specialization is in Area I
- (c) One FCE elective at second or third year level
- (d) Education Third Year P/J Core Courses.

Fourth Year:

- (a) Education Professional Year P/J Core Courses.
- (a) Two FCEs in area of specialization at second year level
- (b) One FCE in Area I if specialization is in Area II or One FCE in Area II if specialization

- (b) One FCE in Area I if specialization is in Area II or One FCE in Area II if specialization is in Area I
- (c) Two FCE electives

8. Concurrent Programs with Education

A. Each of the HBAsc degrees (Interdisciplinary Studies, Anthropology, English, Geography majors) is offered concurrently with a Bachelor of Education degree. Prior to the Professional Year, students should follow the HBAsc program requirements; however, they should also include the prior to entry into the Professional Year requirements of the Primary-Junior Specialization. For more information about concurrent programs, see the Faculty of Education, Department of Undergraduate Studies in Education.

Note:

For students in concurrent honours bachelor degree programs, 1.5 FCEs of required Education courses (Education 4410, 4412, 4413, 4416, and a quarter-course Education elective - students should consult the Timetable) will be taken instead of electives in the HBAsc program, prior to entering the Professional Year.

B. The BAsc (Interdisciplinary Studies) 3-year degree is offered concurrently with a Bachelor of Education (Primary-Junior Specialization only) degree. For more information about concurrent programs, see the Faculty of Education, Department of Undergraduate Studies in Education.

BAsc, BEd (Interdisciplinary Studies) P/J

Four Year program

A cumulative average of 65% in all courses is required. See regulation #2, page 67, regarding the average in the major.

First Year:

- (a) Inquiry 1010 and 1030
- (b) One FCE (full course equivalent) in area of specialization
- (c) One FCE in Area I if specialization is in Area II or One FCE in Area II if specialization is in Area I
- (d) Two FCE electives

is in Area I

- (c) One FCE elective at second year level
- (d) Education Second Year P/J Core Courses.

Third Year:

- (a) Two FCEs in area of specialization at third or fourth year level
- (b) One FCE in Area I if specialization is in Area II or One FCE in Area II if specialization is in Area I
- (c) One FCE elective at second or third year level
- (d) Education Third Year P/J Core Courses.

Fourth Year:

- (a) Education Professional Year P/J Core Courses.

Courses

Courses not offered this academic year (fall/winter terms) are indicated by the words "NOT OFFERED THIS YEAR" below the course description. Nevertheless, students should refer to the Timetable as a final check.

Inquiry 1010

Foundations of Inquiry

3-0; 0-0

Students will study the strategies used in various disciplines of science, social science, arts, and humanities to identify and analyze problems. Exploring selected topics from diverse disciplinary perspectives, they will formulate questions, gather and interpret evidence, and reach well-considered conclusions.

Inquiry 1030

Applications of Inquiry

0-0; 3-0

Prerequisite: Inquiry 1010

Building upon Inquiry 1010, students will apply multidisciplinary strategies to address, in a collaborative setting, complex problems in selected areas of science, social science, arts, and humanities.

Inquiry 1035

Inquiry into Interprofessional Health Education

0-0; 3-0

Prerequisite: Inquiry 1010

Building upon Inquiry 1010, students will investigate the academic and professional demands of various health care professions

Note:

See the Department of Undergraduate Studies in Education, Concurrent Education Programs, Concurrent Content Regulations, for information regarding Mathematics or Science Electives, Music or Visual Arts Requirement, and Canadian Content requirements.

Second Year:

- (a) Two FCEs in area of specialization at second year level
- (b) One FCE in Area I if specialization is in Area II or One FCE in Area II if specialization is in Area I
- (c) One FCE elective at second year level
- (d) Education Second Year P/J Core Courses.

Third Year:

- (a) Two FCEs in area of specialization at third or fourth year level
- (b) One FCE in Area I if specialization is in Area II or One FCE in Area II if specialization is in Area I
- (c) One FCE elective at second or third year level
- (d) Education Third Year P/J Core Courses.

Fourth Year:

- (a) Education Professional Year P/J Core Courses.
- (a) Two FCEs in area of specialization at second year level
- (b) One FCE in Area I if specialization is in Area II or One FCE in Area II if specialization is in Area I
- (c) One FCE elective at second year level
- (d) Education Second Year P/J Core Courses.

Third Year:

- (a) Two FCEs in area of specialization at third or fourth year level
- (b) One FCE in Area I if specialization is in Area II or One FCE in Area II if specialization is in Area I
- (c) One FCE elective at second or third year level
- (d) Education Third Year P/J Core Courses.

Fourth Year:

- (a) Education Professional Year P/J Core Courses.

(such as nursing, social work, kinesiology, gerontology), using available resources to address complex problems from multiple perspectives.

Inquiry 4010
Honours Seminar
3-0; 0-0

Prerequisite: Inquiry 1010 and 1030
Students will engage research strategies used in various disciplines of the arts and sciences to explore complex topics. A proposal for a focused multi-and/or interdisciplinary research project will be developed that will be carried out in Inquiry 4030 - Honours Research. Restricted to fourth-year HBASc students with a B average.

Inquiry 4030
Honours Research
0-0; 3-0

Prerequisite: Inquiry 4010
Students will carry out the research project proposed (and approved) in Inquiry 4010 - Honours Seminar. A written report and oral presentation will be required.

Courses

Courses not offered this academic year (fall/winter terms) are indicated by the words "NOT OFFERED THIS YEAR" below the course description. Nevertheless, students should refer to the Timetable as a final check.

Inquiry 1010
Foundations of Inquiry
3-0; 0-0

Students will study the strategies used in various disciplines of science, social science, arts, and humanities to identify and analyze problems. Exploring selected topics from diverse disciplinary perspectives, they will formulate questions, gather and interpret evidence, and reach well-considered conclusions.

Inquiry 1030
Applications of Inquiry
0-0; 3-0

Prerequisite: Inquiry 1010
Building upon Inquiry 1010, students will apply multidisciplinary strategies to address, in a collaborative setting, complex problems in selected areas of science, social science, arts, and humanities.

Inquiry 1035
Inquiry into Interprofessional Health Education
0-0; 3-0

Prerequisite: Inquiry 1010
Building upon Inquiry 1010, students will investigate the academic and professional demands of various health care professions (such as nursing, social work, kinesiology, gerontology), using available resources to address complex problems from multiple perspectives.

Inquiry 4010
Honours Seminar
3-0; 0-0

Prerequisite: Inquiry 1010 and 1030
Students will engage research strategies used in various disciplines of the arts and sciences to explore complex topics. A proposal for a focused multi-and/or interdisciplinary research project will be developed that will be carried out in Inquiry 4030 - Honours Research. Restricted to fourth-year HBASc students with a B

average.

Inquiry 4030

Honours Research

0-0; 3-0

Prerequisite: Inquiry 4010

Students will carry out the research project proposed (and approved) in Inquiry 4010 - Honours Seminar. A written report and oral presentation will be required.

Inquiry103x

Inquiry Into Environmental Choices

0-0; 3-0

Prerequisite: Inquiry 1010

Building upon Inquiry 1010, students will apply multidisciplinary strategies to address, in a collaborative setting, complex problems with respect to environmental choices, such as pollution, waste management, energy efficiency, etc.

Inquiry 203x

Inquiry into Environmental Methods

3-0; or 3-0

Prerequisite: Inquiry 10xx

Students will be introduced to theoretical and practical aspects of tools and techniques used in environmental research. Themes include Quality Assurance and Quality Control (QA/QC) procedures and certifications, Geographic Information Systems, basic scientific methods and tools and techniques used in quantitative as well as qualitative research in the environmental field.

Inquiry 205x

Environmental Statistics

3-0; or 3-0

An introduction to statistical skills. Measures of relationship, variability, probability, dispersion, and location will be included as well as standard deviations, normal, t, chi-square and f tests, ANOVA, contingency tables, regression and correlation, parametric and nonparametric statistics. Emphasis will be given to application of statistical methods to analyze environmental data.

Inquiry 301x

Aquatic Resources Planning and Management

3-0; 0-0

Prerequisite: Inquiry 103x

Students will investigate biological, chemical and physical aspects of aquatic resources and human

control systems. Emphasis will be placed on complex management challenges, derived from the interaction between the water cycle and human control agencies. Major themes include water supply, water quality, hydropower and flood control, each of which will be examined across a range of scales, technologies and societies.

Inquiry 303x

Field School in Environmental Sustainability I
3-0; 0-0

Prerequisite: 203x

Students will participate in a five to seven day excursion or a series of day excursions to examine ecological, socio - economic and cultural characteristics of the environment. Sites visited will vary depending on the central theme chosen for the course. The field component is followed by a classroom component involving identification and assessment of concepts and issues arising from the field excursion, oral presentations and discussions, and the submission of a research essay.

Notes: A fee is assessed to cover travel and accommodation costs.

Inquiry 305x

Inquiry into Environmental Conservation
3-0; or 3-0

Prerequisite: Inquiry 201x

Students will be introduced to environmental conservation concepts, theories, issues and strategies. Major themes will include environmental law and management. Lectures will discuss historical, conceptual, empirical and experimental approaches to environmental conservation. Oral presentations, written reports and investigative assignments will include case studies as well as the practical application of conservation principles.

Inquiry 307x

Environmental Biotechnology
3-0; or 3-0

Prerequisite: Biology 2711 and Biology 1130

Students will investigate current technical, cultural, and ethical issues in environmental biotechnology, including plant biotechnology and genetically modified foods, mammalian cloning, reproductive technologies, gene therapies, drug development and approval processes, implications of cloning to biodiversity and lateral gene flow, and bioremediation using genetically modified organisms.

Inquiry 401x

Field School in Environmental Sustainability II

3-0; 0-0

Prerequisite: Inquiry 307x Field School

Students are required to complete a minimum of three weeks field program. The normal time for this course is during August after completion of the third year. Location of the project areas may vary from year to year, but, generally regions adjacent to Orillia will be visited. The students will be exposed to a variety of field techniques in interdisciplinary (e.g. biological, geographical and geological) settings and will be required to formalize field observations in reports.

Inquiry 403x

Honours research in Environmental Sustainability

0-0; 3-0

Prerequisite(s): Inquiry 4010

Students will carry out the research project proposed (and approved) in Inquiry 4010. Students enrolled in the Environmental Sustainability program are required to select their research proposal appropriately in consultation with the department. Various research clusters will be identified such as Land Management, Water Resources Management, Urbanization, Environmental Manipulation, Conservation Biology, Energy, Biodiversity etc. and may vary from year to year. A written report and oral presentation will be required.

Inquiry 19xx

First Work Term

The student will participate in Pre- and Post-Work term preparation sessions and activities as designated by the department. Once placed, the student is responsible for meeting the academic requirements of the work term (e.g. Job Description and Training Plan, Performance Appraisal, Work Term Report).

Inquiry 29xx

Second Work Term

Once placed, the student is responsible for meeting the academic requirements of the work term (e.g. Job Description and Training Plan, Performance Appraisal, Work Term Report).

Inquiry 39xx

Third Work Term

Once placed, the student is responsible for meeting the academic requirements of the work

term (e.g. Job Description and Training Plan, Performance Appraisal, Work Term Report).

Inquiry 49xx

Fourth Work Term

Once placed, the student is responsible for meeting the academic requirements of the work term (e.g. Job Description and Training Plan, Performance Appraisal, Work Term Report).

Recommended list of Electives (Subject to availability)

Technical writing I (Eng 1074)

Technical Writing II (Eng 1238)

Environmental History: A Global View (HIST 2010)

Sediments and Sedimentary rocks (Geology 2214)

Geographical Inquiry & Interpretation (Geog 2251)

Northern Environmental Chemistry (Ch 2610)

Plant Ecology (Biology 3114)

Biogeography (Biology 3151)

Environmental Psychology (Psych 3211)

Environmental Geology (Geol 3311)

Environmental geomorphology (Geog 3311)

Environmental Climatology (Geog 3331)

Depositional environments (Geol 3410/ ENST 3410)

Resource management (Geog 3411)

Geography of Energy (Geog 3431)

Urban Residential Structure (Geog 3731)

Evolutionary Concepts (Biology 3671)

English special topics (Eng 3911): Environmental Literature

Ecological and Environmental Anthropology (Anthro 4111)

Human Impacts on the Environment (Anthro 4114)

Ecology of disturbed habitats (Biology 4115)

Advances in contemporary ecology (Biology 4117)

Principles of Fishery Management (Biology 4213)

Climatology: Climate Change (Geog 4351)

Climatology: Local and Microclimates (Geog 4371)

Science under scrutiny (Biology 4371)

Wetland Ecology (Biology 4430)

Society, Culture and Nature (Sociology 4507)

Sustainable communities (Geog 4771)

Section 3

The Faculty(ies) affected by the proposed calendar change

Department of Interdisciplinary Studies, Orillia campus

Courses contributing to program come from Departments of Biology, Chemistry, Economics, English, Fore...

I have been consulted regarding the attached calendar change and understand the academic and budgetary implication on my Dept./School/Faculty.

I agree to this calendar change proposal

Yes

No

Name:

Peter Lee, Department of Biology

Faculty:

Science and Environmental Studies

Date:

Signature of Dean

I agree to this calendar change proposal

Yes

No

Name:

Christine Gottardo, Department of Chemistry

Faculty:

Science and Environmental Studies

Date:

Signature of Dean

I agree to this calendar change proposal

Yes

No

Name:

Livio di Mateo, Department of Economics

Faculty:

Health and Behavioural Sciences

Date:

Signature of Dean

I agree to this calendar change proposal

Yes

No

Name:

Judith Legggatt, Department of English

Faculty:

Social Sciences and Humanities

Date:

Signature of Dean

I agree to this calendar change proposal

Yes

No

Name:

Ulf Runesson, Department of Forestry

Faculty:

Forestry and the Forest Environment

Date:

Signature of Dean

I agree to this calendar change proposal

Yes

No

Name:

Kamil Zaniewski, Department of Geography

Faculty:

Science and Environmental Studies

Date:

Signature of Dean

I agree to this calendar change proposal

Yes

No

Name:

Steve Kissin, Department of Geology

Faculty:

Science and Environmental Studies

Date:

Signature of Dean

I agree to this calendar change proposal

Yes

No

Name:

Dennis McPherson, Department of Indigenous Learning

Faculty:

Social Sciences and Humanities

Date:

Signature of Dean

I agree to this calendar change proposal

Yes

No

Name:

Adam Van Tuyl, Department of Mathematics

Faculty:

Science and Environmental Studies

Date:

Signature of Dean

I agree to this calendar change proposal

Yes

No

Name:

Richard Berg, Department of Philosophy

Faculty:

Social Sciences and Humanities

Date:

Signature of Dean

I agree to this calendar change proposal

Yes

No

Name:

Syed S. Islam, Department of Political Science

Faculty:

Social Science and Humanities

Date:

Signature of Dean

Explanation of Yes answers:

3. Are the proposed changes likely to affect student enrolment in your department/school/faculty?

Yes, adding a major in Environmental Sustainability should help to increase student enrolment. The proposed launching of this program is timely as it coincides with the opening of Orillia's new green campus. Environmental job market is dynamic and there is increased and proven demand for environmental practitioners trained in an interdisciplinary and experiential learning environment.

5. Will the proposed changes require additional teaching space and/or teaching staff and/or equipment and/or other resources?

Yes, but Orillia needs additional faculty and teaching space anyway in order to meet the needs of increased students over the next three to five years. Adding majors is a necessary step in attracting those students who otherwise would be going elsewhere to complete major degrees. Wherever possible, courses will be rotated to ensure that enrolment targets are met in a sustainable fashion. The Orillia budget already has accounted for increased resource needs as enrolments grow.

7. Will the proposed changes increase demand for teaching support services such as the library, computing services, and technical staff?

Yes, but again these additional services will be required by the growth in students. Again, the Orillia budget already has accounted for increased resource needs.

Rationale:

- **Requirement of core courses specifically designed for the Environmental Sustainability program.**
- **Non availability of interdisciplinary and conceptually-matching courses in the relevant topics in the present calendar.**

1. Inquiry 103x: Inquiry into Environmental choices

Credit Weight: 0.5

Prerequisite: INQ 1010

0-0; 3-0

Description:

Building upon Inquiry 1010, students will apply multidisciplinary strategies to address, in a collaborative setting, complex problems with respect to environmental choices, such as pollution, waste management, energy efficiency, etc.

2. Inquiry 203x Inquiry into Environmental methods

Credit Weight: 0.5

Prerequisite: INQ 10xx

3-0; or 3-0

Description:

Students will be introduced to theoretical and practical aspects of tools and techniques used in environmental research. Themes include Quality Assurance and Quality Control (QA/QC) procedures and certifications, Geographic Information Systems, basic scientific methods and tools and techniques used in quantitative as well as qualitative research in the environmental field.

3. Inquiry 205x Environmental Statistics

Credit Weight: 0.5

3-0; or 3-0

Description:

An introduction to statistical methods. Measures of relationship, variability, probability, dispersion, and location will be included as well as standard deviations, normal, t, chi-square and f tests, ANOVA, contingency tables, regression and correlation, parametric and nonparametric statistics. Emphasis will be given to application of statistical methods to analyze environmental data.

Inquiry 301x Aquatic Resources Planning and Management

Credit Weight: 0.5

Prerequisite: INQ 103x

3-0; 0-0

Description:

Students will investigate biological, chemical and physical aspects of aquatic resources and human control systems. Emphasis will be placed on complex management challenges, derived from the interaction between the water cycle and human control agencies. Major themes include water supply, water quality, hydropower and flood control, each of which will be examined across a range of scales, technologies and societies.

4. Inquiry 303x Field School in Environmental Sustainability I

Credit Weight: 0.5

Prerequisite: 203x

3-0; 0-0

Description:

Students will participate in a five to seven day excursion or a series of day excursions to examine ecological, socio - economic and cultural characteristics of the environment. Sites visited will vary depending on the central theme chosen for the course. The field component is followed by a classroom component involving identification and assessment of concepts and issues arising from the field excursion, oral presentations and discussions, and the submission of a research essay.

Notes: A fee is assessed to cover travel and accommodation costs.

5. Inquiry 305x Inquiry into Environmental Conservation

Credit Weight: 0.5

Prerequisite: INQ 201x

3-0; or 3-0

Description:

Students will be introduced to environmental conservation concepts, theories, issues and strategies. Major themes will include environmental law and management. Lectures will discuss conceptual, empirical and experimental approaches to environmental conservation. Oral presentations, written reports and investigative assignments will include case studies as well as the practical application of conservation principles.

6. Inquiry 307x Environmental Biotechnology

Credit Weight: 0.5

3-0; or 3-0

Prerequisite: Biol 2711 and Biol 1130

Description:

Students will investigate current technical and ethical issues in environmental biotechnology, including plant biotechnology and genetically modified foods, mammalian cloning, reproductive technologies, gene therapies, drug development and

approval processes, implications of cloning to biodiversity and lateral gene flow, and bioremediation using genetically modified organisms.

7. Inquiry 401x Field School in Environmental Sustainability II

Credit Weight: 0.5

Prerequisite: INQ 307x Field School

3-0; 0-0

Description:

Students are required to complete a minimum of three weeks field program. The normal time for this course is during August after completion of the third year. Location of the project areas may vary from year to year, but, generally regions adjacent to Orillia will be visited. The students will be exposed to a variety of field techniques in interdisciplinary (e.g. biological, geographical and geological) settings and will be required to formalize field observations in reports.

8. Inquiry 403x Honours research in Environmental sustainability

Credit Weight: 0.5

Prerequisite(s): Inquiry 4010

0-0; 3-0

Description:

Students will carry out the research project proposed (and approved) in Inquiry 4010. Students enrolled in the Environmental Sustainability program are required to select their research proposal appropriately in consultation with the department. Various research clusters will be identified such as Land Management, Water Resources Management, Environmental Manipulation, Conservation Biology, Energy, Biodiversity etc. and may vary from year to year. A written report and oral presentation will be required.

10. Inquiry 19xx First Work Term

The student will participate in Pre- and Post-Work Term Preparation sessions and activities as designated by the department. Once placed, the student is responsible for meeting the academic requirements of the work term (e.g. Job Description and Training Plan, Performance Appraisal, Work Term Report).

11. Inquiry 29xx Second Work Term

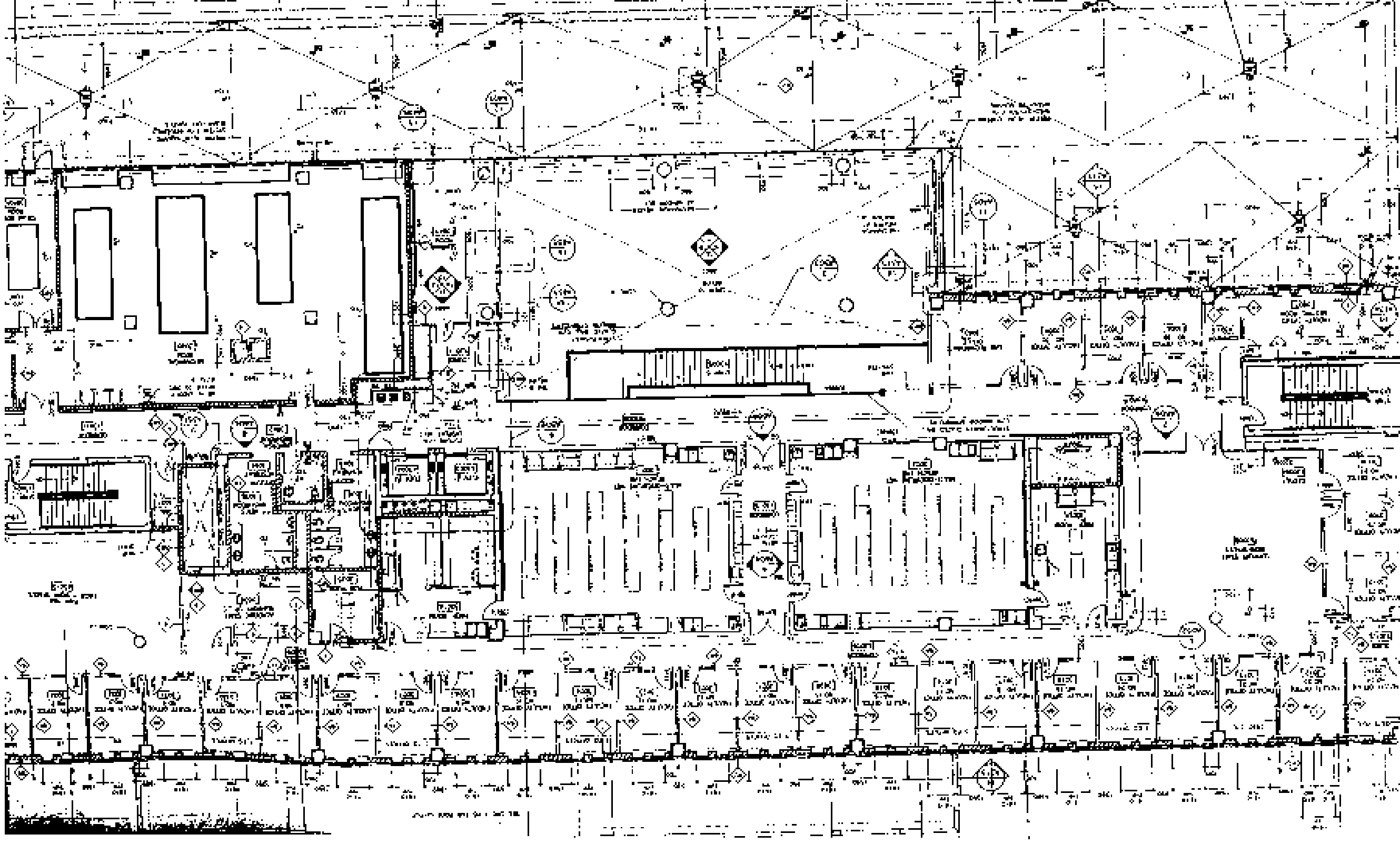
Once placed, the student is responsible for meeting the academic requirements of the work term (e.g. Job Description and Training Plan, Performance Appraisal, Work Term Report).

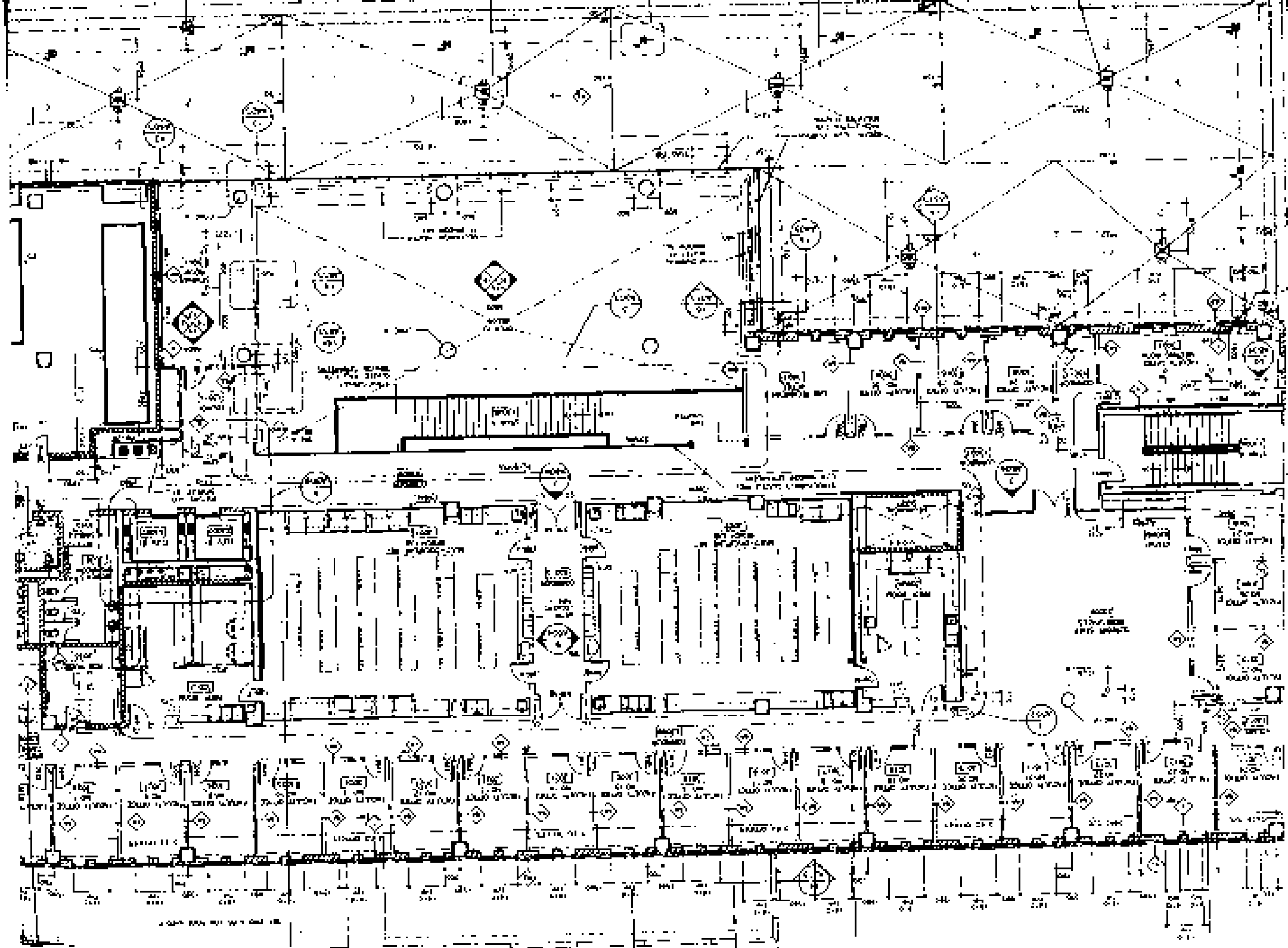
12. Inquiry 39xx Third Work Term

Once placed, the student is responsible for meeting the academic requirements of the work term (e.g. Job Description and Training Plan, Performance Appraisal, Work Term Report).

13. Inquiry 49xx Fourth Work Term

Once placed, the student is responsible for meeting the academic requirements of the work term (e.g. Job Description and Training Plan, Performance Appraisal, Work Term Report).





Report on Initial Contact with Prospective Co-op Employers for Environmental
Sustainability Program at Lakehead University -- Orillia.

By: William Urbanski – Career Assistant, Orillia Campus.

October 21, 2009

INTRODUCTION

This report identifies several prospective co-op employers and will offer specifics about what roles they play in the environmental industry as well as their level of interest. Of the 13 companies contacted, 8 expressed an interest in participating in the co-op component of the Environmental Sustainability program, 3 are known to hire co-op students in various capacities but could not be reached for an interview and 4 were deemed either unsuitable for co-op placement or were not interested in participating.

INTERVIEW PROCESS

This initial sample of employers was mainly restricted to a 100km radius of Orillia. Once the employer's location was determined, the company was researched then contacted by phone and asked a standard set of questions designed to determine what products or services the employer provides, if they hire co-op students (and if so, during what time of year), what type of educational and skill requirements are best suited to the employer and if the employer would consider hiring an Environmental Sustainability student.

RESULTS AND COMPANY PROFILES

Results were mixed, ranging from indifference to willingness to develop working partnerships with Lakehead-Orillia. Prospective employers have been grouped here under three headings: Interested, Not suitable / Not interested, and Potentials.

INTERESTED

AMEC – A worldwide firm, AMEC has offices in Orillia, Barrie and Toronto. The Toronto office was contacted for an interview. Primarily an engineering firm, AMEC also provides a vast array of environmental services including waste water management, toxicology and remediation as well as support to the mining and power generation industry. AMEC regularly hires co-op students and currently employs some at its Toronto locations. Education requirements for this company are a Bachelor's degree in chemistry, biology or engineering.

Brendar Environmental – Based in Barrie, Brendar deals mainly with hazardous waste management for government and industrial sectors. The interviewee stated that he is always looking for co-op students, especially in the spring and summer. The education requirement for this company is a Bachelor of Science degree.

Couchiching Conservancy – The Couchiching Conservancy is a non-profit, non-government charitable organization dedicated to holding natural lands in trust for public benefit. The Conservancy does hire summer student interns, when funding permits. The Conservancy employs a number of people from various disciplines for positions ranging from administrative to hands on classification of flora and fauna

The Environmental Technologist program at Sir Sanford Fleming College was named as popular leader program.

Geospec Engineering - This Barrie company's environmental division primarily carries out phase one to phase three land assessments. Geospec does hire summer students to assist with these assessments. Employees at this organization hold a minimum of a bachelor's degree, usually in engineering.

Lake Simcoe Region Conservation Authority - Based in Newmarket and operating under the provincial government-mandated Conservation Authorities Regulation, the LSRCA monitors the water shed of Lake Simcoe and provides flood forecasting, plan reviews, hazard mapping and Environmental Impact Studies (EIS). With a core team of 35 employees from various disciplines ranging from technician to PhD, the LSRCA operates in over 10 000 square kilometres from the GTA to Haliburton. A regular hire of co-op students, this employer expressed an interest in developing a partnership with Lakehead-Orillia.

Ministry of Environment (Dorset Environmental Science Centre) - This environmental monitoring and reporting centre regularly hires co-op students in natural science programs. This site deals mainly with water quality as well as hydrology and meteorology. The site supervisor expressed an interest in the Environmental Sustainability program and invited further queries.

Ontario Agency for Health Protection and Promotion - Formerly a department of the Ministry of Health, this Orillia-based public health laboratory operates in various capacities from private well-water testing to clinical applications such as virology and immunology. The lab occasionally hires post-secondary science students under the conditions that the student is returning to university after the work term and that the student is available to work five days per week.

Skelton, Brumwell and Associates Inc. - The "Ecological and Environmental Management Division" of this Barrie company is involved in Environmental Impact Studies (EIS), land assessments and species at risk surveys. To perform these services, the company makes use of qualifications from the technologist to the Master's level. The company does hire students, noting that they generally require direct or indirect supervision.

NOT SUITABLE/NOT INTERESTED

Church and Trought - This small company does not hire co-op students in any capacity and expressed disinterest in participating in the program.

McGill Environmental - The Orillia-based branch of this company is involved primarily in garbage pickup.

Region of Huronia Environmental Services - Although this company deals with waste water treatment, the bulk of this company's work involves the manual transportation of sludge.

Simcoe Disposal - This is a one man, garbage hauling service.

POTENTIALS

A.L.S. Laboratory Ltd - This multi-national company has a number of labs in the GTA and does hire co-op students.

Marradi Analytica Inc. - This is one of the largest independent laboratories in the world. They do hire co-op students, but branch managers have not yet been available for an interview.

Trow Associates Inc - Trow is primarily an engineering firm, but do perform some work in the environmental industry. Multiple attempts were made to call their offices in Barrie as well as a subsidiary in Brantford, but did not yield an interview.

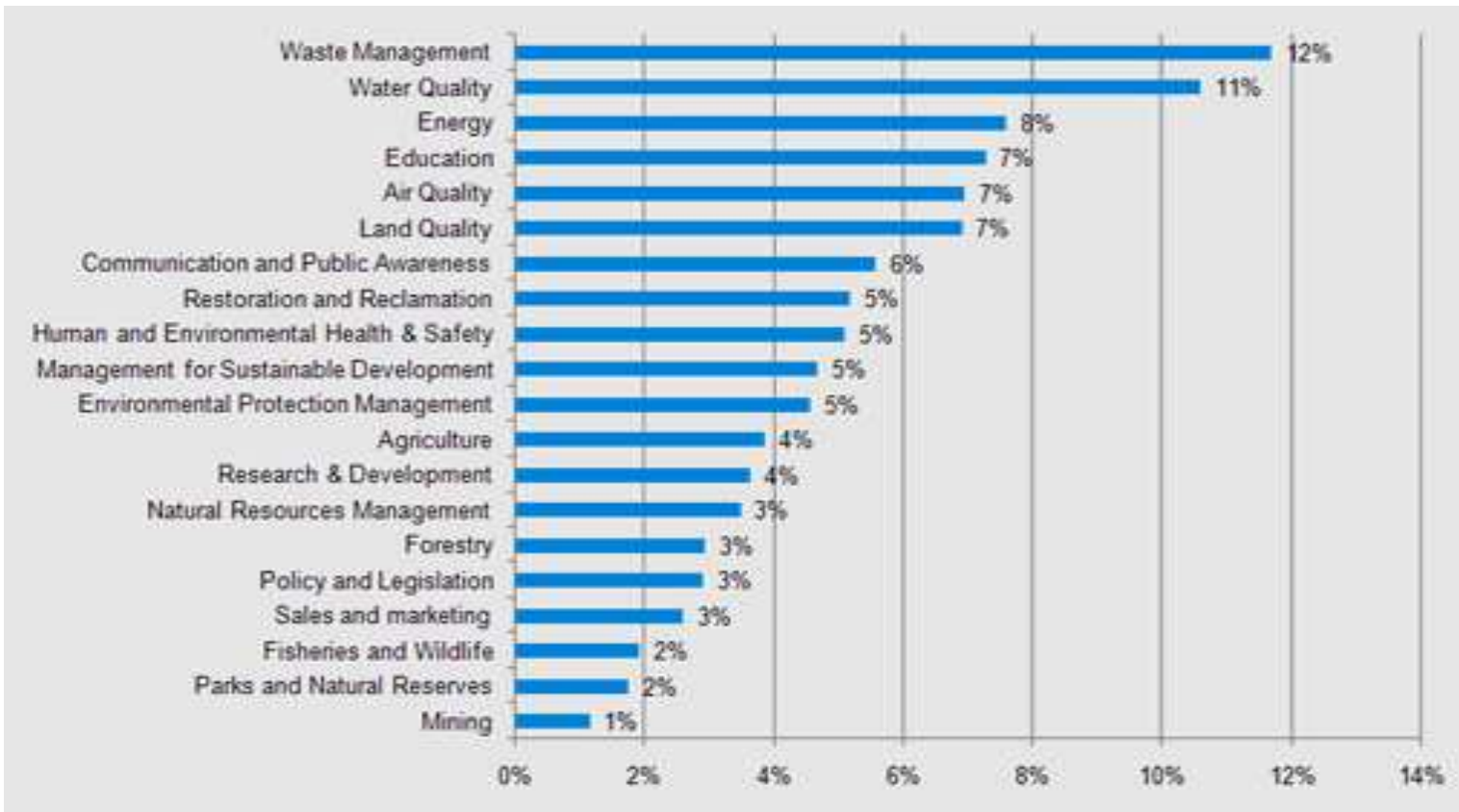
CONCLUSIONS

This initial sample of potential employers showed that there are a number of employers within 100km of Oshawa that are either willing to participate or are already participating in a co-op program. Responses to interview questions were generally positive and shed light on the myriad areas of expertise involved in the environmental sector. Further inquiries into environmental employers should encompass a greater geographical area and perhaps even outside of Ontario.

ATTACHMENT

Please refer to Appendix A.

Appendix 1



http://www.eco.ca/_educator/

Appendix 3

University	Faculty/Centre/Program	Focus	Interdisciplinarity	Remarks/Comments
UBC	Faculty of Science: Interdisciplinary program; B.Sc. or HBSc. Env'tl sciences program	Env'tl. issues facing human societies	High	Weightage on hard sciences compared to other univs.
Dalhousie	Program: Environmental Sciences BSc in Env Sci.	Environmental Science	High	Environmental science is an integral part of several other programs
Toronto	B.A in various Env'tl. Related disciplines B.Sc in various Env'tl. Related disciplines Centre for Environment	Both Sciences and Social sciences	High	Research
Nippising	Dept. of Geography BA Env'tl Geography; HBA Env'tl. Geography; HBSc Sciences & physical Geography	Geography and Biology Lake and Wetlands studies	Medium	Geography and Biology dominated
Guelph	Faculty of Environmental Sciences BSc in Env'tl. Sciences	Natural, physical and social sciences	High	Sciences dominated
York	Fac. Env. Studies BES, MES, Ph.D	Env'tl. Politics, Urban & regional env'ts., Env't. & culture, Env'tl. Mangmt.	High - includes English	1 st in North America Mostly social sciences? Started in 1961 (MES); Research
Trent	Env'tl. Resource Science/Studies B.E.S.S degree; 4-year (Honors)	Both Science and Studies. Some team taught courses	High	Research Institutes, Well balanced subjects weightage
Waterloo	Faculty of Environment Env't and Business; Geography; Env't Management	Various deciplines Separate degrees	Medium	Ecological Research centre to be built in Huntsville in 2010
Lakehead Thunder Bay	Faculty of Science & Environmental Studies HBESc – Env'tl Studies and Biology majors; Env'tl. Studies and Earth science majors; Env'tl. Studies and Geography majors HBES - Env'tl Studies and Geography major	Env'tl Studies Env'tl Sciences	High	Biology, Geography and physical sciences