University of Toronto  
New Undergraduate Program Proposal

## Section 1

<table>
<thead>
<tr>
<th>Program Proposed:</th>
<th>Major Program in Environmental Studies (Honours B.A.)</th>
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<tbody>
<tr>
<td>Department where the program will be housed:</td>
<td>Department of Physical &amp; Environmental Sciences</td>
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<tr>
<td>Faculty / Academic Division:</td>
<td>University of Toronto Scarborough</td>
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</tbody>
</table>
| Institutional Contact:   | Dr. Jane E. Harrison  
Director, Academic Programs and Policy, Office of the Vice Provost, Academic Programs  
jane.harrison@utoronto.ca |
| Direct Entry or Selection of POSt at end of 1st Year: | Selection of POSt at end of 1st Year |
| Start date of new program: | September 2013 |
| Version Date:           | 3 February, 2012 |
New Undergraduate Program Proposal

B.A. in Environmental Studies
Department of Physical and Environmental Sciences, University of Toronto Scarborough

Table of Contents

1. Executive Summary ........................................................................................................................... 3
2. Rationale ............................................................................................................................................ 4
3. Program Description and Content ................................................................................................. 4
4. Learning Outcomes ........................................................................................................................ 8
5. Program Structure and Degree Level Expectations ....................................................................... 8
6. Assessment of Teaching and Learning .......................................................................................... 9
7. Need and Demand .......................................................................................................................... 10
8. Admission Requirements .............................................................................................................. 11
9. Resources: ....................................................................................................................................... 11
10. Quality and other indicators .......................................................................................................... 12
11. Consultation .................................................................................................................................... 13

Appendices

APPENDIX A: FULL LIST OF TITLES AND COURSES
APPENDIX B: COURSE DESCRIPTIONS
APPENDIX C: UNIVERSITY OF TORONTO LIBRARIES REPORT
APPENDIX D: STUDENT SERVICES
APPENDIX E: APPRAISAL REPORT
APPENDIX F: DIVISIONAL ADMINISTRATIVE RESPONSE
APPENDIX G: PROVOSTIAL ADMINISTRATIVE RESPONSE
B.A. in Environmental Studies
Department of Physical and Environmental Sciences, University of Toronto Scarborough

1. Executive Summary

A major in Environmental Studies (B.A.) is being proposed as part of a broader suite of Environmental Science offerings at the University of Toronto Scarborough (UTSC). At UTSC, there is a well-developed suite of Environmental Science programs including undergraduate programs, a joint program with Centennial College, a very successful professional Masters, and a burgeoning doctoral program. An Environmental Studies program adds breadth to the existing offerings and will provide our undergraduate students with the necessary social context of environmental issues, a perspective absolutely essential in order to develop sustainable responses.

There is significant public and student interest in environmental issues, but a substantial number of students have an interest and aptitude not for the mathematics, physics and chemistry of environmental issues (environmental science) but rather the social context of these issues and potential solutions within this realm. For these students, this major is ideal in providing the scientific basis within the appropriate social context. It will also serve as an excellent companion to majors such as Anthropology, Human Geography, Political Science, Public Policy, Sociology, Chemistry, Biochemistry, Environmental Science, Biology, Biodiversity, Ecology and Evolution, Physics and Astrophysics, and Physical Sciences. The title of the program is consistent with other offerings at universities in Canada. At UTSC, the program name “Studies” rather than “Science” is a clear indicator that there is a significant social science component to the program.

The program is designed as a contemporary rendering of the study of environmental problems. A key feature of the proposed program is the classification of the courses offered into Foundation & Skills and Capstone & Applications. The former group aims to build the foundation of the prospective students on different topics related to socioeconomics and environmental science, while the latter group consists of courses that integrate insights from different disciplines and nurture an interdisciplinary way of thinking. These courses also include many opportunities for experiential learning through problem-solving case studies, team-based projects and individual research. Special emphasis is placed on the capacity of the program to successfully build the requisite interdisciplinary, problem-solving skill sets needed when tackling environmental management issues. Relative to other programs, a careful examination of their structure and offerings also suggests that our proposal provides a substantially higher number of cohort courses as well as a very wide range of courses in environmental science, anthropology, sociology, geography, and political sciences. The proposed program effectively balances between the need for a strong foundation on the basic principles characterizing a typical program in Environmental Studies and the importance of building bridges among the various disciplines involved.

We anticipate the hiring of one new tenure track faculty member in the field of Environmental Studies. This individual will have oversight of the new experiential learning courses being proposed at the third and fourth year level. The Chairs of Physical and Environmental and Social Sciences are committed to support the success and further growth of this program. No additional space will be required. Finally, the University of Toronto Scarborough Library as well as the Robarts Library have excellent resources and personnel to offer assistance specifically in the area of environmental studies.
2. Rationale

Statement of Purpose/Overview:
There is significant public interest in environmental issues, yet a substantial number of students do not have an interest in the mathematics, physics and chemistry of environmental problems, but rather in the social context of these issues and potential solutions within this realm. For these students, this major is ideal and can serve as an excellent companion to majors such as Anthropology, Human Geography, Political Science, Public Policy, Sociology, Biology, Biodiversity, Ecology and Evolution, Chemistry, Biochemistry, and Environmental Science, Physics and Astrophysics, and Physical Sciences.

 Appropriateness of nomenclature and program name:
The title of the program is consistent with other offerings at other universities in Canada. At UTSC, the program name “Studies” rather than “Science” is a clear indicator that there is a significant and important social science component to the program.

 Consistency of the program with the University’s mission and divisional academic plan and priorities:
The Department of Physical & Environmental Science is committed to not only providing an understanding of the fundamentals of environmental science, but also tools to apply this knowledge when addressing environmental challenges, consistent with the goal of this new program. The core mission of the Department of Social Sciences is to provide students with the knowledge and conceptual tools to enable the development of a strong, realistic and nuanced understanding of contemporary processes of social and political change.

 Impact of program on the nature and quality of the division’s program of study/overall curriculum:
At UTSC, there is a well-developed suite of Environmental Science programs including undergraduate programs, a joint program with Centennial program, a very successful professional Masters and a burgeoning doctoral program. An Environmental Studies program adds breadth to this suite of programs and will provide undergraduate students with the necessary social context of environmental issues, a perspective absolutely essential in order to develop a sustainable response.

3. Program Description and Content

Distinctive/innovative aspects of the program:
The new program provides the interdisciplinary breadth required for the study of environmental issues, their implications for society and the social solutions to these problems. This program will draw courses from established environmental sciences programs, in which the integration of material from multiple disciplines is already commonplace. It will also have a strong focus on student individual and group projects that are linked to real world issues and will offer opportunities to work with internal and external organizations dealing with environmental problems. The students will take a number of required courses and work together in their last year on a common team problem, so that they have a cohort learning experience from their different perspectives (we anticipate that students will take another major that may range from management, development studies, economics, biology, or other sciences). This strategy differs from most programs in which students share a few early year "perspectives" courses and then separate into varying courses of their own choice, never coming back to share differing viewpoints.

Modes of delivery and how they are appropriate to meet the learning objectives of the program:
Largely classroom teaching, plus community-based research, team-based execution of projects, attendance of high level seminars. Many of these modes of delivery emphasize the process of learning through reflection on doing, i.e., they involve activities outside the conventional setting of the classroom, whereby students have the opportunity to gain hands-on experience. In a later stage, our intent is to have more courses that embrace activities related to action learning, free choice learning, cooperative learning, or service learning. The department of Physical and Environmental Sciences has a long history in experiential learning with a substantial number of courses based on labs,
tutorials, and field trips. Moreover, both departments have recently been involved in a major revaluation exercise of their contemporary practices of experiential learning, whereby the main goals are to conduct a reflective pedagogical scan of the related activities to clearly identify what is currently done that fits within this label and to consider how to enhance the experiential offerings both in quality and quantity. The benefits from this exercise will be highly relevant to the Environmental Studies program proposed.

How the curriculum addresses the current state of the discipline:
The program is designed as a contemporary rendering of the study of environmental issues. The program begins with a series of interdisciplinary environmental science courses providing both the scientific foundation and social context of current environmental challenges. Their primary focus is to dissect a number of contemporary environmental pollution problems (global warming, atmospheric pollution, stratospheric ozone depletion, acid deposition, eutrophication) and to pinpoint the challenges involved when integrating environmental concerns with different socioeconomic values. These courses will be taken from the current inventory of well-crafted and tested courses from both the Department of Social Sciences and from the Department of Physical & Environmental Sciences. The first-year offerings will be followed by an additional suite of courses in environmental science, anthropology, sociology, geography, and political science. All these courses provide different and often conflicting perspectives (e.g., globalization, increasing urbanization, unevenness of economic development, international migration) that are essential for a critical appreciation of the immense challenges encountered when striving for social and environmental sustainability. Finally in the final year, case studies are examined with significant fieldwork to provide a relevant experiential learning component. These capstone experiences will bring the students together in a powerful cohort experience drawing from the foundational components from the earlier years. A calendar entry of the sequence of courses appears at the end of this section as well as the new course descriptions.

Similar programs:
Environmental studies programs in Canadian Universities are widespread. They often draw courses from multiple departments, they mix physical and life sciences with social sciences, and are often based in geography departments. The exact nature of the prescribed courses depends on available faculty. We have compiled information from ten Environmental Studies programs offered by the following universities: York University, University of Windsor, University of Waterloo, University of Guelph, Wilfrid Laurier University, Lakehead University, Trent University, Queen’s University, University of Ottawa and Carleton University. The most distinct feature of the proposed program is the classification of the courses offered into Foundation & Skills and Capstone & Applications. The former group aims to build the foundation of the prospective students on different topics related to socioeconomics and environmental science, while the latter group consists of courses that integrate insights from different disciplines and nurture an interdisciplinary way of thinking. These courses also include many opportunities for experiential learning through problem-solving case studies, team-based projects and individual research. Relative to other programs, a careful examination of their structure and offerings also suggests that our proposal provides a substantially higher number of cohort courses (e.g., Queen’s University) as well as a very wide range of courses in environmental science, anthropology, sociology, geography, and political sciences (e.g., York University). In this regard, we believe that the revised proposal effectively balances between the need for a strong foundation on the basic principles characterizing a typical program in Environmental Studies and the importance of building bridges among the various disciplines involved.

Program Requirements:
Students who enrol in the Major Program in Environmental Studies must also enrol in a companion major program selected from the following list: Anthropology, Human Geography, Political Science, Public Policy, Sociology, Biology, Biodiversity, Ecology and Evolution, Chemistry, Biochemistry, and Environmental Science, Physics and Astrophysics, and Physical Sciences. Other majors are possible with permission of the Supervisor of Study.

Completion of 8.5 credits as follows:

Core Courses: 2.5 credits
EESA01H Introduction to Environmental Science
[ECMA01H Introduction to Microeconomics or ECMA05 Introduction to Macroeconomics]
ESTB01H Introduction to Environmental Studies (new – approved November 15, 2011)
0.5 full credit chosen from:
ANTB01H Political Ecology
GGRA03H Cities and Environments
POLA51H Critical Issues of Canadian Democracy
POLA83H Exploring Globalization
POLB50H Canada's Political Institutions
POLB80H Introduction to International Relations

0.5 full credit chosen from:
EESA05H Environmental Hazards
EESA06H Introduction to Planet Earth
EESA07H Water
EESA09H Wind
EESA10H Human Health and the Environment
EESA11H Environmental Pollution

Foundations & Skills: 3.5 credits
GGRB21H Environments and Environmentalisms
IDSB02H Environment and Development
STAB22H Statistics I

2.0 full credit chosen from:
EESB03H Principles of Climatology
EESB04H Principles of Hydrology
EESB05H Principles of Soil Science
EESB17H Hydro Politics and Transboundary Water Resources Management
EESC13H Environmental Impact Assessment and Auditing
GGRA30H Geographic Information Systems (GIS) and Empirical Reasoning
GGRC22H Political Ecology Theory and Applications
GGRC26H Geographies of Environmental Governance
GGRC44H Environmental Conservation and Sustainable Development
HLTA01H Plagues and People
POLC53H Canadian Environmental Politics (if instructor grants permission)
POLD89H Global Environmental Politics

Capstone & Applications: 2.5 credits
ESTC34H Sustainability in Practice (new - approved December 7, 2011)
ESTD16H Project Management in Environmental Studies (new - approved December 7, 2011)
ESTD17Y Cohort Capstone Course in Environmental Studies (new - approved December 7, 2011)
ESTD18H Environmental Studies Seminar Series (new - approved December 7, 2011)

New Course Descriptions:
ESTB01H Introduction to Environmental Studies
This course introduces the Environmental Studies major and the interdisciplinary study of the environment through a team-teaching format. Students will explore both physical and social science perspectives on the environment, sustainability, environmental problems and their solutions. Emphasis will be on critical thinking, problem solving, and experiential learning.
Breadth Category: Social & Behavioural Sciences
Exclusions: None
Pre-requisites: Enrolment in the Environmental Studies major program
Co-requisites: None
Recommended preparation: None
Limited enrolment: 60 [This course is designed to help build a cohort of environmental studies students and introduce them to the program. There will be significant experiential learning components to this class. For both of these
reasons the size of the course needs to be limited.]

**ESTC34H  Sustainability in Practice**  
*Course description:*  
This course is intended for students who would like to apply theoretical principles of environmental sustainability learned in other courses to real world problems. Students will identify a problem of interest related either to campus sustainability, a local NGO, or municipal, provincial, or federal government. Class meetings will consist of group discussions investigating key issues, potential solutions, and logistical matters to be considered for implementation of proposed solutions. Students who choose campus issues will also have the potential to actually implement their solutions. Grades will be based on participation in class discussions, as well as a final report and presentation.  
*Breadth Category:* Natural Sciences  
*Exclusions:* None  
*Pre-requisites:* Enrolment in the Environmental Studies major program and 9.5 credits  
*Co-requisites:* None  
*Recommended preparation:* None  
*Limited enrolment:* 20 [Course will be partially seminar based and projects must be chosen with the help of the course instructor]

**ESTD16H  Project Management in Environmental Studies**  
*Course description:*  
Students will select a research problem in an area of special interest. Supervision will be provided by a faculty member with active research in geography, ecology, natural resource management, environmental biology, or geosciences as represented within the departments. Project implementation, project monitoring and evaluation will form the core elements for this course.  
*Breadth Category:* Natural Sciences  
*Exclusions:* None  
*Pre-requisites:* Enrolment in the Environmental Studies major program and 14.5 credits  
*Co-requisites:* None  
*Recommended preparation:* None  
*Limited enrolment:* 30 [Course will be partially seminar based and projects must be chosen with the help of the course instructor]

**ESTD17Y  Cohort Capstone Course in Environmental Studies**  
*Course description:*  
This course is designed to provide a strong interdisciplinary focus on specific environmental problems including the socioeconomic context in which environmental issues are resolved. The cohort capstone course is in 2 consecutive semesters, providing final year students the opportunity to work in a team, as environmental researchers and consultants, combining knowledge and skill-sets acquired in earlier courses. Group research to local environmental problems and exposure to critical environmental policy issues will be the focal point of the course. Students will attend preliminary meetings schedules in the Fall semester.  
*Breadth Category:* Natural Sciences  
*Exclusions:* None  
*Pre-requisites:* Enrolment in the Environmental Studies major program and 14.5 credits  
*Co-requisites:* None  
*Recommended preparation:* None  
*Limited enrolment:* 30

**ESTD18H  Environmental Studies Seminar Series**  
*Course description:*  
This course will be organized around the DPES seminar series, presenting guest lecturers around interdisciplinary environmental themes. Students will analyze major environmental themes and prepare presentations for in-class debate.  
*Breadth Category:* Natural Sciences  
*Exclusions:* None  
*Pre-requisites:* Enrolment in the Environmental Studies major program and 14.5 credits
4. Learning Outcomes

Learning outcomes:
The goal is to provide students with cutting edge knowledge of the fields of study necessary to understand the fundamental cause-effect relationships surrounding the major environment problems and the ability to seek solutions to current environmental issues. Our students will be able to understand:

i. The basic principles of the physical sciences and economics that underlie our major environmental problems;
ii. The social and cultural factors that affect our ability to implement solutions to these problems;
iii. The history of environmental science and environmental movements;
iv. The current state of environmental policy; and
v. The challenges of teamwork within multidisciplinary teams.

Describe how the structure of the program supports the learning outcomes:
As noted above, the program is a contemporary rendering of the study of environmental issues beginning with a series of interdisciplinary environmental science courses providing both the scientific foundation (outcome i) and social context of current environmental challenges (outcome ii). These courses are followed by a series of social science courses providing the grounding of environmental thinking (outcomes iii and iv). A core course, ESTB01H, titled “Introduction to Environmental Studies” will bring the students together in an early cohort experience, at the same time as they are building their foundation through a number of introductory, first-year courses carefully designed to introduce the fundamental principles of management, development, economics, biology, and environmental sciences. This course also aims to foster interdisciplinary environmental thinking through experiential learning. Throughout the program special emphasis is placed on the integration of assessment tools that test problem-solving, action-oriented research skills. This feature will offer the proper foundation to successfully undertake the upper year environmental studies courses, which are extensively characterized by problem-solving orientation with the use of case studies, team-based projects and individual research (outcome v).

5. Program Structure and Degree Level Expectations

<table>
<thead>
<tr>
<th>Degree Level Expectations</th>
<th>How developed within the program</th>
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<tbody>
<tr>
<td>How does the program link with scholarship and rigour in the discipline? Does it address the current state of the area of study?</td>
<td>It provides courses in key areas taught by experts in the disparate fields. It also offers students some courses perfectly tailored to demonstrate how to address the intricate nature of the major environmental problems. We have meticulously reviewed the course offerings and the degree level expectations from similar Environmental studies programs in almost all the Universities in Ontario and several prominent U.S. institutions (Yale, Brown, Dartmouth, University of Michigan, University of Pennsylvania, University of Southern California). We are confident that the proposed program offers the rigour and breadth needed to objectively deliver the current state of knowledge in the field.</td>
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How does the structure of the program ensure that depth is achieved in the subject? The most distinct feature of the proposed program is the classification of the courses offered into *Foundation & Skills* and *Capstone & Applications*. The former group aims to build the foundation of the prospective students on different topics related to socioeconomics and environmental science, while the latter group consists of courses that integrate insights from different disciplines and nurture an interdisciplinary way of thinking.
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<tr>
<th>Degree Level Expectations</th>
<th>How developed within the program</th>
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<tr>
<td>How will students gain a knowledge of methodologies?</td>
<td>From individual course materials (for example Statistics, GIS, Introduction to Environmental Sciences) and from the Seminar course which will expose students to science study methods and to methods of social inquiry.</td>
</tr>
<tr>
<td>Will students completing the program be able to frame relevant questions for further inquiry? Will they be able to seek the tools through which they can effectively address such questions? Please elaborate.</td>
<td>Students will be exposed to different viewpoints on similar topics and will become aware of significant differences in approaches embraced by various disciplines. This critical approach is likely to nurture their ability to question the methods typically used in specific disciplines, and to obtain the foundation for developing new strategies to solving environmental problems. Importantly, the Department of Physical &amp; Environmental Sciences has long history in experiential learning with a substantial number of courses based on labs, tutorials, and field trips. Yet, the Department has recently been involved in a major revaluation exercise of its contemporary practices of experiential learning, whereby the main goals are to conduct a reflective pedagogical scan of the related activities to clearly identify what is currently done that fits within this label; and to consider how to enhance the experiential offerings both in quality and quantity. The benefits from this exercise will be highly relevant to the proposed Environmental Studies program.</td>
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<td>What are the connections, if any, with activities outside the classroom?</td>
<td>Two courses, one at the C-level and one at the D-level are project-based courses that will require students to interact with the community on an environmental issue as well as to interact with each other during the execution of their work and writing their report.</td>
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<td>What skills, competencies or expertise will students completing the program have gained?</td>
<td>A familiarity with basic science of common environmental problems, teamwork, project management, report writing, presentation skills, problem-solving, listening.</td>
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<tr>
<td>Will the program prepare students for further study? Please elaborate.</td>
<td>This is a Major program that will provide students with a basic understanding of environmental issues as viewed from different perspectives and disciplines. The Environmental Studies Major program is expected to be combined with a separate Major drawn from another discipline (any type of science, politics, economics, management etc). The second major will primarily determine students’ suitability for graduate work, although they will have sufficient training to take on graduate studies in environmental studies.</td>
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### 6. Assessment of Teaching and Learning

**Methods of assessment:**
Normal grading procedures will be used for the written reports, assignments, midterm and final exams, especially for the courses taken in the first two years. In upper year courses, the assessment of the progress of our students will not solely rely upon “conventional” types of examination, but also involves team projects, essays, and oral presentations of issues often considered core, or cutting-edge in environmental studies. Students will also be encouraged to self-
evaluate teamwork and oral communication skills through reflective analysis of the experiential components of the program.

How level of student performance will be documented and demonstrated:
The Grade Point Average (GPA) will be the main measure to assess how well students are doing in their academic studies in the first two years. In the upper years, in addition to this measure, feedback will also be sought for those involved in the community projects course, both instructors and community participants.

7. Need and Demand

Student interest:
We expect numbers from 50-100, which is probably a conservative estimate, given the typical enrolment of several of our programs. For example, our Environmental Science Major program consistently received more than 50 students during the 2004-2009 period, while the Program in Human and Physical Geography demonstrates a distinctly increasing trend over the last 4-5 years.

Social need:
Solutions to environmental challenges are complex and require a broad based education in the natural and social sciences. This program integrates environmental perspectives from both science realms to provide students with the tools to understand the complexity and potential solutions to environmental challenges. The program is delivered in a distinctly experiential manner, culminating in a cohort capstone project in the final year.

Employment opportunities for prospective graduates:
This is dependent on the second major, but students could find employment with environmental non-governmental organizations, environmental consulting, policy setting government departments, public relations, journalism, international bodies, banks etc.

Interest expressed by potential employers, professional associations, government agencies or policy bodies:
ECO Canada has identified the environmental field as one of the fast growing sectors.

Table 1: Undergraduate Enrolment Projections

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<tr>
<td>1st year*</td>
<td>30</td>
<td>53</td>
<td>70</td>
<td>75</td>
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<td>2nd year</td>
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<td>25</td>
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<tr>
<td>3rd year</td>
<td>7</td>
<td>20</td>
<td>25</td>
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<td>25</td>
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<tr>
<td>4th year</td>
<td>3</td>
<td>8</td>
<td>20</td>
<td>25</td>
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<tr>
<td>Totals</td>
<td>30</td>
<td>53</td>
<td>70</td>
<td>75</td>
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*Students choose their major/minor/specialist program after first year

We anticipate that students will transfer into the program in the first year of the program, 2013-14. Most students do not formally choose their Major(s) until the end of the first and thus we leave the 1st year blank. We anticipate a steady state by year 2016-2017. If the program becomes more popular than anticipated we are contemplating imposing GPA restrictions on program admission to ensure that the capstone cohort experience is both manageable and meaningful.
8. Admission Requirements

Admission requirements including how they are appropriately aligned with the learning outcomes established for the program:
Students enter the program after first year. There are no admission requirements.

Enrolment limit for the program:
Not at present. If enrolment exceeds that which is anticipated, a GPA requirement will be contemplated for admission to the program.

Is the program direct entry?
No, we are not proposing direct entry for this program.

9. Resources:

Brief statement re: number and quality of faculty who will actively participate in the delivery of the program:
Includes nine research active tenured or tenured stream faculty members with a variety of environmental teaching and research interests (see Table 2 below).

Role of adjunct and contractual faculty:
No new sessional or adjunct faculty will be required to mount the program. The four new courses will be taught by new and existing faculty.

Provision of supervision of experiential learning opportunities:
The upper year experiential learning opportunities will be managed by the course instructor (EESC34H, EESD16H, EESD17H).

Plan re: additional faculty resources if any:
A new faculty position is being sought to support the program.

Will it require part-time or sessional faculty on an ongoing basis?
No new sessional or part-time faculty will be required to mount the program.

Permanent faculty prepared to act as program supervisor:
All the permanent faculty have enthusiastically embraced this program and eagerly anticipate its approval. A program supervisor will not be difficult to find among this group.

New courses proposed:
Details of these courses are provided in Section 3
(i) ESTB01H Introduction to Environmental Studies
(ii) ESTC34H Sustainability in Practice
(iii) ESTD16H Project Management in Environmental Studies
(iv) ESTD17Y Cohort Capstone Course in Environmental Studies- team project (full year)
(v) ESTD18H Environmental Studies Seminar Series
Table 2: Detailed listing of committed faculty

<table>
<thead>
<tr>
<th>Faculty name and rank</th>
<th>Home unit</th>
<th>Area(s) of Specialization</th>
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</thead>
<tbody>
<tr>
<td>George Arhonditsis, Associate Professor</td>
<td>Environmental Science, Geography</td>
<td>Ecosystem modelling</td>
</tr>
<tr>
<td>John Hannigan, Professor</td>
<td>Sociology</td>
<td>Environmental sociology</td>
</tr>
<tr>
<td>Matt Hoffmann, Associate Professor</td>
<td>Political Science</td>
<td>Environmental policy</td>
</tr>
<tr>
<td>Marney Isaac, Assistant Professor</td>
<td>Environmental Science, IDS</td>
<td>Soil science and social-ecological systems</td>
</tr>
<tr>
<td>Thembela Kepe, Associate Professor</td>
<td>Geography</td>
<td>Environmental conservation</td>
</tr>
<tr>
<td>Ken MacDonald, Assistant Professor</td>
<td>Geography, International Development</td>
<td>Sustainable development</td>
</tr>
<tr>
<td>Carl Mitchell, Assistant Professor</td>
<td>Environmental Science, Geography</td>
<td>Hydrology</td>
</tr>
<tr>
<td>William Gough, Associate Professor</td>
<td>Environmental Science, Geography</td>
<td>Climatology</td>
</tr>
<tr>
<td>Roberta Fulthorpe, Professor</td>
<td>Environmental Science</td>
<td>Microbiology</td>
</tr>
<tr>
<td>Raj Narayanareddy, Assistant Professor</td>
<td>Geography</td>
<td>Urban ecology and geographies of waste and labour</td>
</tr>
<tr>
<td>Susannah Bunce, Assistant Professor</td>
<td>Geography, Environmental Studies</td>
<td>Urban sustainability</td>
</tr>
</tbody>
</table>

Notes:
1. The Chairs of Physical and Environmental Science and Social Sciences are committed to support the success and further growth of this program.

T.A. support:
Teaching Assistant support will be required for all the new courses and will be directly proportional to the enrolment. Other courses already have requisite TA support based on enrolment and course design.

Reference Appendices:
- Library statement attached
- Support services statement attached

Space requirements:
Courses will be taught in the existing UTSC room inventory. One hire is anticipated for the program and an office and graduate student space will be provided out of the UTSC space inventory.

Equipment requirements:
None.

10. Quality and other indicators

Most of the courses are taught by tenure track Assistant Professors or tenured Professors with expertise in the topics covered. Both the Departments of Physical & Environmental Sciences and Social Sciences have a long tradition of high quality teaching as indicated by the course evaluations and teaching awards. All committed faculty are research active bringing in research support and supervising graduate students. It is anticipated that these graduate students will serve as teaching assistants for the program.
11. Consultation

**Departmental/Divisional:**
The program draws courses from the Department of Physical & Environmental Sciences and from the Department of Social Science at UTSC. Both Department Chairs have agreed.

**UTSC:**
See above. The program was approved by Academic Committee on April 17, 2012.

**Tri-Campus:**
There are similar programs at St. George and UTM. The program at the St. George campus is administered by the Centre for the Environment. It requires seven (7) FCEs and is not direct entry. Two (2) FCEs are prescribed, while the others are drawn from a choice of 15 courses. A course in biology is required. A capstone seminar course is also required. UTM does not offer an environmental studies program, only environmental science of which half (0.5) FCE must provide a social perspective.

This proposed program has the students sharing more courses, and does not require that they take biology (the content of which is becoming increasingly molecular and less environmental). The science in this program adopts a system perspective that encompasses a wide array of sciences. This program provides a greater cohort experience and does also provide a community experiential capstone seminar course.

Key individuals from both programs (Professors Lino Grima and Tenley Conway) have reviewed our proposal. They both enthusiastically support this initiative. In particular, Professor Grima (Centre for the Environment, FAS) praised the form and the rationale of the program. He also added that the proposed coupling of this major with a major in the disciplines that offer the courses is a significant innovation.

**Beyond UofT (where appropriate):**
N/A

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APPENDIX A: FULL LIST OF TITLES AND COURSES

Major in Environmental Studies: Program Requirements

Completion of 8.5 credits as follows:

Core Courses: 2.5 credits
EESA01H Introduction to Environmental Science
[ECMA01H Introduction to Microeconomics or ECMA05 Introduction to Macroeconomics]
ESTB01H Introduction to Environmental Studies

0.5 credit chosen from:
ANTB01H Political Ecology
GGRA03H Cities and Environments
POLA51H Critical Issues of Canadian Democracy
POLA83H Exploring Globalization
POLB50H Canada's Political Institutions
POLB80H Introduction to International Relations

0.5 credit chosen from:
EESA05H Environmental Hazards
EESA06H Introduction to Planet Earth
EESA07H Water
EESA09H Wind
EESA10H Human Health and the Environment
EESA11H Environmental Pollution

Foundations & Skills: 3.5 credits
GGRB21H Environments and Environmentalisms
IDSB02H Environment and Development
STAB22H Statistics I

2.0 credits chosen from:
EESB03H Principles of Climatology
EESB04H Principles of Hydrology
EESB05H Principles of Soil Science
EESB17H Hydro Politics and Transboundary Water Resources Management
EESC13H Environmental Impact Assessment and Auditing
GGRA30H Geographic Information Systems (GIS) and Empirical Reasoning
GGRC22H Political Ecology Theory and Applications
GGRC26H Geographies of Environmental Governance
GGRC44H Environmental Conservation and Sustainable Development
HLTA01H Plagues and People
POLC53H Canadian Environmental Politics
POLD89H Global Environmental Politics

Capstone & Applications: 2.5 credits
ESTC34H Sustainability in Practice
ESTD16H Project Management in Environmental Studies
ESTD17Y Cohort Capstone Course in Environmental Studies
ESTD18H Environmental Studies Seminar Series
APPENDIX B: COURSE DESCRIPTIONS

**ANTB01H  Political Ecology**
This course examines human-environmental relations from an anthropological perspective. Throughout the semester, we explore how peoples from different parts of the globe situate themselves within culturally constructed landscapes. Topics covered include ethnoecology, conservation, green consumerism, the concept of 'wilderness', and what happens when competing and differentially empowered views of the non-human world collide.

**ECMA01H  Introduction to Microeconomics**
Economic theory of the firm and the consumer. Although calculus is not used in this course, algebra and graphs are used extensively to illuminate economic analysis.
*Note:* This course is not for students interested in applying to the Specialists in Management and Economics leading to the B.B.A or for the Major program in Economics.

**ECMA05H3  Introduction to Macroeconomics**
Topics include output, employment, prices, interest rates and exchange rates. Although calculus is not used in this course, algebra and graphs are used extensively to illuminate economic analysis.
*Note:* This course is not for students interested in applying to the Specialists in Management and Economics leading to the B.B.A or for the Major program in Economics.

**EESA01H  Introduction to Environmental Science**
The scientific method and its application to natural systems. The physical and biological processes which drive ecosystem functions. Anthropogenic changes in ecosystem functions at local and global scales. Emphasis on the degradation of the atmosphere, soil, water and biological resources caused by human activity. Renewable and non-renewable resource sustainability.

**EESA05H  Environmental Hazards**
This course is an investigation of the geological background and possible solutions to major hazards in the environment.
Environmental hazards to be studied include: landslides, erosion, earthquakes, volcanic eruptions, asteroid impacts, flooding, glaciation, future climate change, subsidence, and the disposal of toxic wastes. This may be of interest to a wide range of students in the life, social, and physical sciences; an opportunity for the non-specialist to understand headline-making geological events of topical interest. No prior knowledge of the Earth Sciences is required.

**EESA06H  Introduction to Planet Earth**
This course explores the composition, structure and origin of the Earth and the physical and biological processes that operate in and on it; the history of the Earth as revealed in the rock record. The flows of energy and mass through natural systems, and the impact of human activity on system processes, with particular reference to land use change, soil degradation and atmospheric pollution.

**EESA07H  Water**
This course consists of a survey of the planet's water resources and the major issues facing the use of water. Topics include: Earth, the watery planet; water, the last great resource; Canada's waters; Ontario's waters; water and man; water contamination; and protecting our waters. Case studies such as the Walkerton tragedy will be studied. No prior knowledge of environmental science is required.

**EESA09H  Wind**
A survey of the science, history and applications of wind. Topics include storms including hurricanes, tornadoes and midlatitude cyclones, global circulation, local circulations, measurement of winds, impact of winds on land surfaces, wind power, winds and pollution,
historical and literary winds, and contemporary wind research. No prior knowledge of environmental science is required.

**EESA10H  Human Health and the Environment**
Because of pollution, our surroundings are becoming increasingly hazardous to our health. The past century has seen intense industrialization characterized by the widespread production and use of chemicals and the intentional and unintentional disposal of a wide range of waste materials. This course explores the relationship between the incidence of disease in human populations and the environmental pollution. Emphasis will be placed on understanding where and what pollutants are produced, how they are taken up by humans and their long term effects on health; the role of naturally-occurring carcinogens will also be examined. The course will include a view of risk assessment and toxicology using case studies. No prior knowledge of environmental or medical science is required.

**EESA11H  Environmental Pollution**
This course illustrates the environmental effects of urban expansion, changing methods of agriculture, industrialization, recreation, resource extraction, energy needs and the devastation of war. Drawing on information from a wide spectrum of topics - such as waste disposal, tourism, the arctic, tropical forests and fisheries - it demonstrates what we know about how pollutants are produced, the pathways they take through the global environment and how we can measure them. The course will conclude with an examination of the state of health of Canada's environments highlighting areas where environmental contamination is the subject of public discussion and concern. No prior knowledge of environmental science is required.

**EESB03H  Principles of Climatology**
This is an overview of the physical and dynamic nature of meteorology, climatology and related aspects of oceanography. Major topics include: atmospheric composition, nature of atmospheric radiation, atmospheric moisture and cloud development, atmospheric motion including air masses, front formation and upper air circulation, weather forecasting, ocean circulation, climate classification, climate change theory and global warming.

**EESB04H  Principles of Hydrology**
The water and energy balances; fluxes through natural systems. Process at the drainage basin scale: precipitation, evaporation, evapotranspiration and streamflow generation. The measurement of water fluxes, forecasting of rainfall and streamflow events. Human activity and change in hydrologic processes.

**EESB05H  Principles of Soil Science**
A study of the processes of pedogenesis and the development of diverse soil profiles, their field relationships and their response to changing environmental conditions. An examination of the fundamental soil properties of importance in soil management. An introduction to the techniques of soil examination in the field, soil analysis in the laboratory and the basic principles of soil classification.

**EESB17H3  Hydro Politics and Transboundary Water Resources Management**
Competition for water resources between countries is common; population and economic growth are exacerbating this. The socio-political, environmental and economic aspects of transboundary water transfers are explored; the success of relevant international treaties and conventions, and the potential for integrated management of transboundary waters are assessed. Examples from Asia, Africa and the Middle East are presented.

**EESC13H  Environmental Impact Assessment and Auditing**
To familiarize students with the relevant legislation, qualitative and quantitative approaches and applications for environmental impact assessments and environmental auditing. The focus will be on the assessment of impacts to the natural environment, however, socio-economic impacts will
also be discussed. Environmental auditing and environmental certification systems will be discussed in detail. Examples and case studies from forestry, wildlife biology and land use will be used to illustrate the principles and techniques presented in the course. Students will acquire "hands-on" experience in impact assessment and environmental auditing through case studies.

**ESTB01H Introduction to Environmental Studies (new)**
This course introduces the Environmental Studies Major and the interdisciplinary study of the environment through a team-teaching format. Students will explore both physical and social science perspectives on the environment, sustainability, environmental problems and their solutions. Emphasis will be on critical thinking, problem solving, and experiential learning.

**ESTC34H Sustainability in Practice (new)**
This course is intended for students who would like to apply theoretical principles of environmental sustainability learned in other courses to real world problems. Students will identify a problem of interest related either to campus sustainability, a local NGO, or municipal, provincial, or federal government. Class meetings will consist of group discussions investigating key issues, potential solutions, and logistical matters to be considered for implementation of proposed solutions. Students who choose campus issues will also have the potential to actually implement their solutions. Grades will be based on participation in class discussions, as well as a final report and presentation.

**ESTD16H Project Management in Environmental Studies (new)**
Students will select a research problem in an area of special interest. Supervision will be provided by a faculty member with active research in geography, ecology, natural resource management, environmental biology, or geosciences as represented within the departments. Project implementation, project monitoring and evaluation will form the core elements for this course.

**ESTD17Y Cohort Capstone Course in Environmental Studies (new)**
This course is designed to provide a strong interdisciplinary focus on specific environmental problems including the socioeconomic context in which environmental issues are resolved. The cohort capstone course is in 2 consecutive semesters, providing final year students the opportunity to work in a team, as environmental researchers and consultants, combining knowledge and skill-sets acquired in earlier courses. Group research to local environmental problems and exposure to critical environmental policy issues will be the focal point of the course. Students will attend preliminary meetings schedules in the Fall semester.

**ESTD18H Environmental Studies Seminar Series (new)**
This course will be organized around the DPES seminar series, presenting guest lecturers around interdisciplinary environmental themes. Students will analyze major environmental themes and prepare presentations for in-class debate.

**GGRA03H3 Cities and Environments**
An introduction to the characteristics of modern cities and environmental issues, and their interconnections. Linkages between local and global processes are emphasized. Major topics include urban forms and systems, population change, the complexity of environmental issues such as climate change and water scarcity, planning for sustainable cities.

**GGRA30H Geographic Information Systems (GIS) and Empirical Reasoning**
Confirmatory causal modeling and GIS; map as model; GIS data input; cartographic and GIS data structures; data errors and editing; elementary spatial analysis; measurement; map comparison; classification; statistical surfaces; spatial arrangement; privacy issues.

**GGRB21H Environments and Environmentalisms (new)**
This foundational course explores different conceptions of ‘the environment’ as they have changed through space and time. It also analyzes the emergence of different variants of
environmentalism and their contemporary role in shaping environmental policy and practice.

**GGRC22H  Political Ecology Theory and Applications**
Explores how politics, the economy, history and culture shape, and are shaped by interactions of people with the physical environment. Analysis moves beyond the roles government and interest groups in shaping environmental policies, to expanding our understanding of 'politics' in (i) environmental discourses and knowledge; (ii) economic systems; (iii) regimes of natural resource ownership and use; and (iv) everyday struggles within and between communities and interest groups as they shape human-nature relationships.

**GGRC26H  Geographies of Environmental Governance (new)**
Course addresses the translation of environmentalism into formalized processes of environmental governance; and examines the development of environmental institutions at different scales, the integration of different forms of environmental governance, and the ways in which processes of governance relate to forms of environmental practice and management.

**GGRC44H3  Environmental Conservation and Sustainable Development**
Deals with two main topics: the origins of environmental problems in the global spread of industrial capitalism, and environmental conservation and policies. Themes include: changes in human-environment relations, trends in environmental problems, the rise of environmental awareness and activism, environmental policy, problems of sustainable development.

**HLTA01H  Plagues and People**
Considers the origins, antiquity and impact of plagues on human societies. The course will embrace cultural, evolutionary, epidemiological and ecological themes. Consideration will be given to historic, contemporary and newly-emerging infectious epidemics, with a view to understanding why "plagues" emerge and how their occurrence is intimately linked to human behaviour.

**IDSB02H  Development and Environment**
The environmental consequences of development activities with emphasis on tropical countries. Environmental change in urban, rainforest, semi-arid, wetland, and mountainous systems. The influences of development on the global environment; species extinction, loss of productive land, reduced access to resources, declining water quality and quantity, and climate change.

**POLA51H  Critical Issues of Canadian Democracy**
This course examines some issues critical to the well being of Canadian democracy. The issues may change from year to year but will normally include citizen participation, ethical conduct in political life, national unity, and North American regionalism.

**POLA83H  Exploring Globalization**
This course introduces students to a series of issues in global politics and their consequences for Canadian citizens, including the globalizing economy, terrorism, and environmental degradation. The course probes how these major issues are beginning to change the landscape of world politics and present challenges to political authority and collective identity.

**POLB50H  Canada's Political Institutions**
This course examines the institutional foundations of Canadian government. The constitution, the executive, Parliament, the public service, the federal system, the Charter of Rights and Freedoms, and the courts are discussed, with emphasis on their role in democratic and responsible government.

**POLB80H  Introduction to International Relations**
This course examines different approaches to international relations, the characteristics of the international system, and the factors that motivate foreign policies.
POLC53H  Canadian Environmental Politics
This course examines the ideas and success of the environmental movement in Canada. The course focuses on how environmental policy in Canada is shaped by the ideas of environmentalists, economic and political interests, public opinion, and Canada's political institutional framework. Combined lecture-seminar format.

POLD89H  Global Environmental Politics
Examines the challenges faced by humanity in dealing with global environmental problems and the politics of addressing them. Focuses on both the underlying factors that shape the politics of global environmental problems - such as scientific uncertainty, North-South conflict, and globalization - and explores attempts at the governance of specific environmental issues.

STAB22H  Statistics I
This course is a basic introduction to statistical reasoning and methodology, with a minimal amount of mathematics and calculation. The course covers descriptive statistics, populations, sampling, confidence intervals, tests of significance, correlation, regression and experimental design. A computer package is used for calculations.
APPENDIX C: UNIVERSITY OF TORONTO LIBRARIES REPORT

University of Toronto Libraries Report for the
Major Program in Environmental Studies,
Department of Physical and Environmental Sciences, University of Toronto Scarborough, 2011

Context: The University of Toronto Library (UTL) system is the largest academic library in Canada and is currently ranked fourth among academic research libraries in North America, behind Harvard, Yale and Columbia.¹ The research and special collections, together with the undergraduate libraries comprise almost 11.5 million print volumes, nearly 5.5 million microform volumes, more than 17,000 journal subscriptions, in addition to a rich collection of manuscripts, films, and cartographic materials. The system also provides access to approximately 900,000 electronic resources in various forms including e-books, e-journals, and online indices and increasingly supports access via personal handheld devices.² There are numerous collection strengths in a wide range of disciplines reflecting the breadth of research and instructional programs at the University. The strong collections, facilities and staff expertise attract unique donations of books and manuscripts from around the world, which in turn draw scholars for research and graduate work.

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Top 5 Canadian Universities in the ARL Ranking of Major North American Research Libraries

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Space and Access Services: The Library system provides a variety of individual and group study spaces for both undergraduates and graduates in the 10 central and 23 divisional libraries on the St. George, Mississauga, Scarborough and Downsview campuses. Study space and computer facilities are regularly available in Scarborough from 8 am to 10:30 pm, until to 2 am during extended hours, and 24 hours a day during exams. Web-based services and electronic materials are accessible at all times from campus or remote locations, through the U of T based Scholars Portal and other leading edge digital services. The UTS library provides a variety of computer workstations and an extensive range of software and study space and computer facilities are available twenty four hours, five days per week at the St. George campus Roberts Library.

² Figures as of 2010 taken from UTL’s “What’s new in E-Resources” page http://main.library.utoronto.ca/elir/EIRwhatsnew.cfm and UTL’s annual statistics http://discover.library.utoronto.ca/general-information/about-the-library/annual-statistics
³ Association of Research Libraries Statistics.
Instruction & Research Support: The Library plays an important role in the linking of teaching and research in the University. To this end, information literacy instruction is offered to assist in meeting four of seven degree level expectations related to the ability to gather, evaluate and interpret information. In particular, the Library will be of assistance in helping students to develop analytical thinking skills, skills and competencies pertaining to research and knowledge management, preparation for further study in the field and preparedness for entering the job market. These services are aligned with the Association of College and Research Libraries (ACRL) Information Literacy Competency Standards for Higher Education.\footnote{Association of College & Research Libraries. \textit{Information Literacy Standards}. ACRL, 2006.}

Program Specific Instruction: Instruction occurs at a variety of levels for Environmental Studies students. The U of T Scarborough Library facilitates formal instruction integrated into the class schedule and hands-on tutorials related to course assignments. The Coordinator of Information Literacy and other librarians provide instruction in Environmental Science courses including recent classroom instruction for EESA01. The Library, through its liaison librarians, customizes feeds of library resources which appear prominently in all Portal/Blackboard course pages. The Library also creates online "LibGuides" for various courses on the Scarborough campus to assist students in doing research and completing their assignments, and has created guides specifically for EESA01, EESB15 and EESC31 among others.

Collections: Collections are purchased in all formats by all college and campus libraries in support of the Major Program in Environmental Studies, and include new media formats where appropriate. In addition to the resources at the UTSC Library, research in Environmental Studies is supported by libraries on all three campuses, including The Gerstein Science Information Centre and the Naranda Earth Sciences Library. Resources focused on supporting the Political Science, Anthropology, and Geography courses associated with the major program in Environmental Studies are also collected by the Robarts Library and several other St. George Libraries which serve the Social Sciences, in addition to the Social Science resources available locally at the U of T Scarborough Library. The University of Toronto Library is committed to collecting both print and electronic materials in support of the Major Program in Environmental Studies at the University of Toronto.

Journals: The Library subscribes to all of the top 25 journals listed in ISI’s 2009 Journal Citation Report Science Edition for the subject category of Environmental Sciences. All of these titles are available electronically to staff and students of the University. Additionally, the Library subscribes to all of the top 10 journals with the highest impact factor as listed in ISI’s 2009 Journal Citation Report Science Edition for the same subject category. Again, these are all available electronically to the staff and students of the University.

Monographs: The University of Toronto Library maintains comprehensive book approval plans with 53 book dealers and vendors worldwide. These plans ensure that the Library receives academic monographs from publishers all over the world in an efficient manner and the Library continues to acquire more than 120,000 print monograph volumes per year and an ever growing number of electronic books. In addition to these plans, the University of Toronto Scarborough Library does title-by-title selection in the area of Environmental Sciences (and various Social Sciences related to the field of Environmental Studies; particularly Political Science, Anthropology and Geography) and will shortly establish its own approval plans for these areas of study. The UTSC Library is also committed to acquiring e-books to suit the information-seeking behavior of both students and faculty members in the Major Program in Environmental Studies and UTSC Librarians will continue to build their partnerships with faculty so that the book approval plans are in line with the research interests of faculty members and the program’s curriculum.

Preservation, Digitization, and Open Access: The University of Toronto Library supports open access to scholarly communication through its institutional research repository (known as T-Space), its open journal and open conference services, and subscriptions to open access publications. In addition to acquiring materials in support of the Major Program in Environmental Studies, the Library is also, in cooperation with the Internet
Archive, digitizing its monograph holdings published before 1923. These books are available without charge to anyone with access to the Internet through the Scholar's Portal e-book platform.

**Key Databases:** UTL has subscriptions to all key databases in the area of Environmental Studies. These include Environmental Science databases such as GREENFILE, the InfoTrac Environmental Issues & Policy eCollection and Environmental Sciences & Pollution Management, as well as the Geology database GeoRef. Additionally, the Library subscribes to major databases in the related Social Science fields of interest to Environmental Studies scholars such as Worldwide Political Science Abstracts, Anthropology Plus and GeoBase. The Library also has access to numerous online encyclopedias and dictionaries such as the Environmental Encyclopedia (Gale), the Encyclopedia of Global Change, the Encyclopedia of Global Environmental Change, the McGraw-Hill Dictionary of Environmental Science, the Environmental Contaminant Reference Databook and the Canadian Environmental Resource Guide, and numerous online reference sources in the various Social Science disciplines associated with the Major Program in Environmental Studies.

**Special Collection Highlight:** In 2010, the UTSC Library, in collaboration with faculty and staff, established the Digital Scholarship Unit. The mission of the unit is to create, acquire, preserve and provide access to digital collections that will inspire and facilitate research and knowledge creation for the purposes of teaching and learning. The early focus of the unit is in the disciplines of the social sciences and humanities with the long-term goal to collaborate and partner with a broad range of disciplines including Environmental Studies.

**Current Gaps:** The Library is currently working to respond to the rapid growth of the Scarborough campus. We anticipate growth in staffing and resources in the short term to reflect recent expansion.

Prepared by: Chad Crichton, Coordinator, Reference, Research and Instruction March 24, 2011
Submitted by: Carole Moore, Chief Librarian, University of Toronto Libraries, April 6, 2011

Carole Moore

New Graduate Program Proposal – Environmental Studies, BA
APPENDIX D: STUDENT SERVICES

Information for Quality Assurance Framework – UTSC

All students at the University of Toronto Scarborough have access to a range of services and co-curricular educational opportunities that complement the formal curriculum. Housed within the Division of Student Affairs, these services support the success of our students from the time they are admitted through to graduation and beyond. Student services are learning services. Programs support, engage and challenge students to reach their full potential as learners, leaders and citizens.

Academic Advising & Career Centre (AA&CC) provides an integrated and collaborative suite of career, employment, advising and learning skill development services. Students consult with professionals who are both experts in one of these fields and generalists in all. Services begin with initial course selection and career exploration prior to first year and continue through advanced learning skill development to graduate/professional school exploration and/or workplace transition. Students access these services in individual one-on-one appointments, group seminars, web-based self-service and special events and fairs.

AccessAbility Services provides students access to a highly responsive disability service which is just now launching online services to link faculty exam accommodations, note-taking services, and registration. This service also serves a growing campus as a key resource for consulting re: accessible design, both physically and pedagogically. Advising and referrals are regularly provided for learning disabilities, acquired brain injury, and chronic mental health disabilities.

Athletic & Recreation Centre provides all students sport and recreational facilities and programs. Team play at all levels in a wide variety of sports up to inter-faculty, individual fitness and a variety of instructional programs are offered. Sport camps for several levels up to age 16 are hosted during the summer as well as a league comprising 48 basketball teams.

Department of Student Life (DSL) manages the recognition of approximately 250 campus groups including the facilitation of 9 Departmental Student Associations (DSAs), risk assessment for all campus student events, multi-faith prayer spaces, space allocation for many clubs/events and represents the University as a partner in the annual Fall Orientation. First Generation outreach programming and community in-reach mentorship programs are also included. The DSL has a mandate to liaise with all student societies and ensure their compliance with University policy. Leadership programming is one of the best recognized features of the DSL along with its Office of the First Year. Another responsibility is managing the process for the annual distribution of Club Funds and Student Enhancement funding on behalf of the Council on Student Services

Health & Wellness Centre is an integrated service providing a full range of physical and mental health care and health promotion including a medical clinic, UHIP services for International students, immunization, contraception and five outreach teams of peer educators addressing mental health & stigma; sexual health; smoking cessation, alcohol and socializing and nutritional health. Mental health is professionally addressed through counselling and treatment options for psychological and emotional concerns include psychotherapy, group therapy, psychiatric services and referrals.

International Student Centre (@UTSC) provides orientation, study permit, travel and work permit advising, arranges specialized academic skills workshops, English conversation clubs; cultural programming, tax clinics, notary public services, crisis intervention and collaborative inter-departmental services.

Orientation and First Year Transition programs provide information, coaching and inclusion in a student development context, making interventions on a sequential basis delivering content, when needed.

- “Get Started” offered by our integrated Academic Advising & Career Centre runs for two weeks in June and July hosting about 75% of new admits along with their parents. The program includes a plenary session introducing students to academic and career services to support them in their goal setting and decision-making. It also includes special sessions for parents, a sample faculty lecture, calendar navigation and course selection workshops. The program is staffed by 15-20 trained senior student peer leaders.
- International Orientation – provided by the ISC@UTSC is a full day experience in September covering many logistics special to this group and their visa status; learning styles and general academic orientation. This program is strongly complimented by our “International Buddy “program which pairs international students to campus-based peer educators long before arrival.
• **Fall Orientation** – a three to five day series of events hosted by the Student Village Council (SVC) and Scarborough Campus Athletic Association (SCAA) and the SCSU, as the anchor host. Fall Orientation is a partnership between Student Affairs and the SCSU and includes both meet-the-faculty opportunities, educational events and presentations (sexuality to financial debt management presented in theatrical/comical, engaging ways). Social events are distributed throughout the agenda including participation in the tri-campus parade. The goal is to have every student conclude “I’m so glad I chose to attend UTSC!”

• **Co-op** and other units outside of Student Affairs also host separate orientations.

**Student Housing & Residence Life** manages the on-campus residences and provides a robust and supportive system of Rez life via 20 Residence Advisors and other dedicated student services staff. This service also includes UTSC specific off-campus housing listings and resources for students living independently.

In addition to the programs and services offered through the Division of Student Affairs, co-curricular support is also provided through academic and student managed units.

**Academic Travel Fund** provides research and related scholarly funding for undergraduate students to underwrite the costs of valuable non-course based academic activities such as attending and presenting at conferences.

**Centre for Teaching and Learning** supports students and faculty in the development of skills directly associated with success in a scholarly environment. It provides direct service to students through *The Writing Centre, The Math and Statistics Aid Centre, English Language Development, Information Literacy, Science Engagement, and Instructional Technologies.*

**Co-op Offices (Arts & Science and Management)** serve students registered in 95 co-operative education programs, facilitating eight to twelve months full-time, paid experiential learning opportunities. Students in co-op receive developmental support in goal-setting, job search, resume writing and interviewing. For each four month experience they are evaluated on the basis of mid-term and final performance reviews as well as a final report that is graded by a faculty member within the discipline.

**Departmental Student Associations (DSAs)** were formed in 2006 to enable a bridge between students and their academic departments. Each of seven (nine as of July 1, 2010) academic departments has a DSA, governed by annually-elected student executive bodies and formed entirely of student members. These student groups liaise with faculty, the Department of Student Life and the Scarborough Campus Student Union to develop joint programming that enhances the discipline-specific learning and career development goals of students in each department.

**Financial Aid and Awards** provides resources and consultation services to assist students with financing their education, including processing of OSAP, UTAPS and other funding sources.

**Lesbian, Gay, Bisexual, Transgendered and Questioning** students are served by a campus-supported Positive Space Committee comprised of allies drawn from all segments of UTSC as well as a student LGBTQ club funded and facilitated independently through the Council on Student Services.

**Registrar’s Office** provides front line advice for students from arrival to graduation, assisting with course and program enrollment and registration troubleshooting. It also administers the petitioning process to serve students whose circumstances require academic dispensation.

**Student Centre** offers bookable activity spaces for students as well as a food court, a full-service restaurant and a variety store. It also houses the Office of Student Affairs, the Department of Student Life, the International Student Centre, *The Underground* (student newspaper), the Health & Wellness Centre, the Women’s Centre, Fusion Radio and the offices of the Scarborough Campus Student Union.
April 1, 2012

MEMO
To: John Scherk
Vice-Dean, Undergraduate
University of Toronto, Scarborough Campus
Cc: Mathew Hoffmann, Associate Professor

From: Ben Cashore
Professor, Environmental Governance & Political Science
School of Forestry & Environmental Studies, Yale University

Re: Proposed Environmental Studies Major, University of Toronto Scarborough

ISSUE

You have asked that I provide a review of the proposed undergraduate major in environmental studies, University of Toronto Scarborough. I am happy to do so. You have asked that when I conduct my review that I consider the following points.

• Rationale for the program
• Distinctive or innovative aspects of the program
• How the curriculum addresses the current state of the area of study
• Appropriateness of the learning outcomes and how they are to be achieved
• Appropriateness of the structure of the program
• Methods of evaluation
• Need and demand for the program
• Appropriateness and effectiveness of the admission requirements
• Adequacy of faculty and staff resources
• Appropriateness of collective faculty expertise

I proceed in the following steps. First, I provide overview comments. Second, I provide overall ideas on key themes. Third, I focus on specific issues that arose for me when reading the proposed document. Third, I identify recommendations that result.

OVERVIEW

I have carefully read the undergraduate proposal and find it to be highly sophisticated in identifying and addressing the key pedagogical needs facing environmental studies. Its clear focus on problem solving is important because interdisciplinary approaches, by themselves, are insufficient for training the next generation of environmental managers. Instead, as this document emphasizes, students must be trained to understand what types of approaches and methods best suit particular problems in question. Too often the field of environmental studies falls back on a preference of one discipline over another (which can lead some environmental studies departments and faculty to engage in rather tired debates about the supremacy of some disciplines and sub-disciplines over others). The exciting part of environmental studies is that students get to be trained in a number of relevant techniques and critical analyses so that they can, when confronted with an environmental problem or problems, determine what appears to be the most appropriate set of skills for the problem in question. This theme nicely captures this need in a way that I believe, as I discuss below is cutting edge.
THEMES FOR CONSIDERATION

- **Problem solving and evaluation**

I have recently spent two years as member of a multi-stakeholder steering committee on a certification assessment that has led me to recognize two key challenges confronting researchers and teachers focusing on evaluation. First, the *effects of the instrument being evaluated will vary over time in ways that are often unpredictable*. The instrument will also interact with other existing or future instruments that render *single instrument evaluations inadequate*.

My own research assessing private governance (eco-labeling/certification) in the forest sector is illustrative. A generation ago most firms in North American and Europe were opposed to eco-labeling. Now, most industrial forest companies accept, and undergo, third party auditing of their forest practices. Hence, any evaluation of the effects of certification 15 years ago would have found limited support and impacts, and might have encouraged governments and other actors to chose more “effective” instruments. Yet such advice, based on “fixed” preferences and “linear” impacts, would have, with the benefits of hindsight, been misplaced. Second, eco-labeling is now gaining a focus on “legality verification”, which, while much more modest, is generating large coalitions of forest companies, aid agencies, and developed and developing country governments. These coalitions are employing a range of policy instruments all designed to weed out of global markets illegally harvested timber. Whether these efforts to focus on the “bottom” practices with players will be successful to the extent that supply chain tracking of legally harvested wood products can be institutionalized. The combination of a range of interventions or “policy baskets” (Gunningham, Grabosky, and Sinclair 1998), and diffuse authority, confront traditional evaluation techniques (Hassell 2005; Winkler 2006) because they require attention to policy intersection (Young 2002) across multiple scales (Young et al. 2006). Finally, it is entirely possible that supply chain tracking for timber legality verification, once in place, could fill in “prerequisite” conditions, for improving the uptake of higher standard certification in the tropics.

My point here is that the next generation of environmental studies scholars must incorporate, rather than bypass, the role of evolution and intersection. This is not an easy task and illustrates the challenges between “accuracy” and “precision”. I honestly believe that the course offerings and approach you offer below are consistent with these questions, but I would suggest that you be slightly more explicit about how your course offerings are consistent with these greater challenges. In fact, your problem focused approach is well suited to do this because such an approach almost invariably leads to the recognition that interaction is important, and that, preferences and values tend to change (I give some practical suggestions below when discussing classes).

- **A physical home**

I have come to believe that the missing ingredient in many well intended interdisciplinary environmental studies programs is the existence of a physical home for students operating in this program. This is because students in such a program will never have the depth of students focusing on a particular discipline or sub-discipline. The lack of a physical home, I hypothesize, means that students are likely to “fall back” on one discipline over the other, as they settle into communities that do have physical homes or departments. I realize that this suggestion is beyond the financial requirements of what you are offering, but I still think it is worth flagging as a worthy goal.
• Environmental management?

I am wondering whether you have considered using the term “environmental management” over “environmental studies?” At Yale we have gone in both directions. Our professional “masters of environmental management” (MEM) is our most popular degree while our undergraduate program emphasizes “environmental studies.” However we provide a “fast track” for Yale undergraduates wishing to take our program so that they can add “management” to their CV and curriculum. I actually don’t have an answer to this question, but would note that the more “problem focused” a curriculum becomes, the more “management” might both be more appropriate, but also attract a greater number of students interested in applying interdisciplinary knowledge to problems solving.

SPECIFIC ISSUES

• Courses

  o Core Courses

I like these. Nothing to add.

• Foundations & Skills: 3.5 credits

I would separate out “foundations” from “skills.” My first reading of the courses listing foundation and skills was that students were able to choose which foundations classes they wanted but then I realized this was referring to the “skills” classes. Also if “studies” is kept as the overall label for the program, perhaps add the adjective “management” before “skills”

• ESTB01H Introduction to Environmental Studies

I like very much the overview of this class. I would emphasize that this is the class that should probably be targeted for comparing and addressing specific problems. My favourite example these days that illustrates evolution and intersection is the case of what is now widely regarded as a very successful Alaska fisheries management system for Salmon and Halibut, that promotes sustainable catches. This program generally follows Ostrom’s design principles including excluding access to the resource and, drawing on Harding, privatizing licenses. While this seems like a wonderful story and which leads many to ask how we “scale up” to promote this effort elsewhere, a broader historical lens that also asks how this effort does, or might, interact with other problems, raises important questions students need to puzzle through. For instance, if we ask why Alaska was able to engage is such a sustainable process after years of failure, one hypothesis that emerges is that the success of the Alaska fishery coincided with the dramatic (and more ecologically problematic) growth of the Salmon aquaculture industry. The mass produced farm salmon market may have created a “niche” high end wild salmon market that provided the impetus for Alaska to reform. If correct however, a “small” success story resulted only by creating a much larger problem (think of the game of Wack-a-mole). Moreover, by controlling access and limit consumption, the Alaska model
requires that policy makers go elsewhere to address the role and impact of population growth and consumption on global stewardship (since a local resource success story, in the absence of reduction in consumption, may simply place greater stress on resources elsewhere).

The new generation of environmental studies and management curriculum must be designed in a way that allows students to be honest about, and address head on, rather than bypass, these thorny and complex challenges. Again I believe this proposed curriculum meets this challenge as best as any I have seen. I just emphasize it as important to flag in this introductory course. The challenge, of course, is to do this in a way that doesn’t leave students to feel helpless. There do exist not only ways to think about these issues, but also important interventions at global, national, local and private scales, that are sure to excite students in a problem focused endeavor.

Also I wasn’t sure how this was an introductory class versus a core course. Perhaps because it is meant to pave the way for core courses?

- **ESTD16H Project Management**

  *Course description:*
  “Students will select a research problem in an area of special interest. Supervision will be provided by a faculty member with active research in geography, ecology, natural resource management, environmental biology, or geosciences as represented within the departments. Project implementation, project monitoring and evaluation will form the core elements for this course.”

  Perhaps change the title to “Topics in Environmental Management?"

  Again I like this but would encourage the curriculum to be sure to teach students the pros and cons of various monitoring and evaluation techniques.

- **Learning outcomes:**

  “The goal is to provide students with cutting edge knowledge of the fields of study necessary to understand the fundamental cause-effect relationships surrounding the major environment problems and the ability to seek solutions to current environmental issues. Our students will be able to understand”

  i. The basic principles of the physical sciences and economics that underlie our major environmental problems;

  ii. The social and cultural factors that affect our ability to implement solutions to these problems;

  iii. The history of environmental science and environmental movements;

  iv. The current state of environmental policy; and

  v. The challenges of teamwork within multidisciplinary teams.

I like the above review, the key questions and the broader discussion. Two points come to mind that I think are consistent with what you are saying and what you could emphasize. The first is that it is now apparent that any prescription for moving forward must contain a clear “logic” as to
why various actors would support the intervention, and the degree to which the intervention might enjoy some type of “stickiness” (Levin et al. 2012). Too often we focus on devising good policy, but much less attention is placed on the causal mechanisms that might lead to durable and effective results. As a result, more often than not the, policy either has little effect, or, is removed if it is deemed to have too many negative effects on non-environmental values. In my current class, International Environmental Policy and Governance (taught every other year as a grad and undergraduate class) we require students to offer a new architecture for global environmental governance consistent with their theories about why states and non-state actors might cooperate or support them. I find most student enjoy linking this type of theory to practice over concrete questions.

The review also focuses on “how the structure of the program supports the learning outcomes” and you write that you will foster “problem-solving orientation with the use of case studies, team-based projects and individual research.” This is good but I do think it comes down a bit too much on the “technical” versus “power” side of social science analysis. Learning can do many things including fostering greater knowledge among diverse interests about “win win” opportunities in which preferences over instruments and approaches might change (Sabatier and Jenkins-Smith 1993), such as replacing light bulbs, or learning that some types of forests require sunlight for regeneration and hence need large cut blocks, which, to many who don’t understand forest silviculture, simply oppose owing to the visual blight that clearcutting creates. At the same time, learning can also expose key value differences among groups that simply cannot be managed away. To the extent that this course offering can allow students to understand when power, rather than problem solving, is at play, this would be fantastic (Cashore 2010). (I would add that an honest focus on power may help uncover yet more innovative solutions, such as the legality verification instrument discussed above, that can be hidden when assessments are too sanguine).

Of course you do recognize this point when you explain that “Students will be exposed to different view-points on similar topics and will become aware of significant differences in approaches embraced by various disciplines” which, as you correctly point out “This critical approach is likely to nurture their ability to question the methods typically used in specific disciplines, and to obtain the foundation for developing new strategies to solving environmental problems.”

- **Admission requirements**

I like that there are none. The point is that students will get the necessary training by enrolling. Requirements can keep great students out, especially those that might be scared away if there had been an emphasis on science courses over other social science classes.

- **Need and Demand of the Program/Faculty and Staff Resources/Expertise**

While there is no way of predicting these things, I would note that similar types of changes at Yale led to an exponential increase in applications to our masters program. A similar phenomenon occurred at UBC forestry where their “conservation” program, that was initially a niche effort, now houses the majority of enrolled students. I think you are on the right path to expanding enrolments and interest. My brief review of the faculty you identify illustrates the care you have taken to ensure a range of lenses from within social science, but also bridging to natural sciences. The proposal to raise resources for some faculty will be integral to creating a core “hub” in addition to the wide range of spokes to current faculty you have nicely corralled.
RECOMMENDATIONS

I think this is a superior effort and well done. Clearly great care has gone into developing an environmental studies program that draws on the best of other programs, while advancing the key tools needed to address actual environmental problems in ways that incorporate, rather than bypass, societal values, power, and change.

For these reasons my comments are minor. The above is offered simply to provide reflections as the document is revised. I personally believe this document is ready to go as is.

The only recommendation I would make, which is beyond your purview, is to see what can be done to create a physical place for these students so they can generate their own community. I can tell you that based on my experience, it is our student community in our school that makes our interdisciplinary focus so infectious.

Please feel free to call me with any questions.

References Cited


Levin, Kelly, Benjamin Cashore, Steven Bernstein, and Graeme Auld. 2012. "Overcoming the Tragedy of Super Wicked Problems: Constraining our Future Selves to Ameliorate Global Climate Change." revised and resubmitted January 25 for final decision, Policy Sciences


11 April 2012

Professor Cheryl Regehr
Vice-Provost, Academic Programs
Office of the Vice-President and Provost
Simcoe Hall
University of Toronto

Dear Cheryl,

Administrative Response, External Review of the
Proposed Environmental Studies Program

We have received the report of the external reviewer, Professor Ben Cashore, of the proposed new undergraduate major program in Environmental Studies. We are grateful to him for his very encouraging and supportive report. He writes, "I have carefully read the undergraduate proposal and find it to be highly sophisticated in identifying and addressing the key pedagogical needs facing environmental studies." "I think this is a superior effort and well done. Clearly great care has gone into developing an environmental studies program that draws on the best of other programs, while advancing the key tools needed to address actual environmental problems in ways that incorporate, rather than bypass, societal values, power, and change."

We have considered carefully the comments and recommendations in the report and offer the following in response:

- We appreciate the report’s main recommendation to create a physical space for students in the program, because we understand the important role this can play in building a sense of community among students in an interdisciplinary program. Unfortunately, currently there is limited space available for such purposes; however, the University of Toronto Scarborough has ambitious plans to continue to expand its physical resources in the coming years. As space becomes available we will plan to set some aside for students in Environmental Studies. In the meantime we will encourage students in the program to create a student association and will help them to organize regular events outside the classroom.

- The reviewer asks whether we have considered using the term “Environmental Management” instead of “Environmental Studies” as the name for the program, although the reviewer himself is ambivalent about the appropriate name. We have given this question serious consideration and it is the general consensus that Environmental Studies is more appropriate, because it is thought to be more representative of the perspective of the program. This point is further emphasized by
our wholehearted agreement with the reviewer's general recommendation that we emphasize more strongly the "power" side of social science analysis. Faculty in the program agree that the program and individual courses should not just be about problem solving but that there also must be a critical component in them. If the focus were mainly on problem solving, then the rubric of Environmental Management would be more appropriate. In this instance, colleagues will keep this suggestion in mind as the courses are developed.

- The faculty who have designed the program have considered the suggestion to separate out "Foundations" from "Skills" in the headings of the calendar listing of the program. They are reluctant to do so because this would reduce flexibility in course selection. As well, they do not wish to change "Skills" in this heading to "Management Skills" because some of the courses, such as Geographic Information Systems, would not fit well under this rubric.

- We will change the title of the course ESTD16 to "Topics in Environmental Management", as suggested.

By way of conclusion, we would like to reiterate our sincere gratitude to Professor Cashore for his affirmation of the excellence of the Environmental Studies program and his constructive recommendations.

Sincerely yours,

John Scherk
Acting Dean and Vice-Principal (Academic)
April 17, 2012

Rick Halpern
Dean and Vice-Principal Academic
University of Toronto Scarborough

Re: Appraisal Report, Proposed new B.A.Honours Major in Environmental Studies

Dear Rick,

I am very pleased by the extremely positive appraisal of the proposed B.A. Honours Major in Environmental Studies. John Scherk’s administrative response to the appraisal written on your behalf nicely summarizes the report and highlights the specific suggestions made by the reviewer for consideration. I note that Professor Cashore of Yale University has suggested incorporating the term “management” in a number of ways in the structure and title of the proposed program. I am pleased to see that these various suggestions were carefully considered by the program faculty who have made the following decisions:

- To continue unanimously to feel that the original proposed program name better reflects the program’s perspective;
- To follow Dr. Cashore’s advice to rename the upper level Capstone course “Project Management in Environmental Studies,” “Topics in Environmental Management;” and
- To have rejected the suggestion to label the “Foundations and Skills” component of the program “Foundations” and “Management” on the grounds that the current structure supports flexibility for students and better describes the scope of the recommended courses.

The reviewer described the proposal as a “superior effort” which was “highly sophisticated in identifying and addressing the key pedagogical needs facing environmental studies.” I will be very pleased to recommend this new B.A. Honours Major to governance for approval, following approval at the Divisional level.

Sincerely,

Cheryl Regehr
Vice-Provost, Academic Programs

cc.  John Scherk, Lesley Lewis, Annette Knox, Jane Harrison