UNIVERSITY OF TORONTO SCARBOROUGH

OFFICE OF THE CAMPUS COUNCIL

FOR INFORMATION **PUBLIC** **OPEN SESSION**

TO: UTSC Academic Affairs Committee

SPONSOR: Prof. William Gough, Vice-Principal Academic and Dean
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PRESENTER: See above.
CONTACT INFO:

DATE: Tuesday, November 22, 2016

AGENDA ITEM: 3d

ITEM IDENTIFICATION:

External Review of the Graduate Department of Physical and Environmental Sciences

JURISDICTIONAL INFORMATION:

Under section 5.6 of the Terms of Reference of the University of Toronto Scarborough Academic Affairs Committee (UTSC AAC) provides that the Committee shall receive for information and discussion reviews of academic programs and units consistent with the protocol outlined in the University of Toronto Quality Assurance Process. The reviews are forwarded to the Committee on Academic Policy and Programs for consideration.

GOVERNANCE PATH:

1. Committee on Academic Policy & Programs [For Approval] (November 1, 2016)
2. Agenda Committee of the Academic Board [For Information] (November 14, 2016)
3. **UTSC Academic Affairs Committee [For Information] (November 22, 2016)**
4. Academic Board [For Information] (November 24, 2016)
5. Executive Committee of the Governing Council [For Information] (December 5, 2016)
6. Governing Council [For Information] (December 15, 2016)

PREVIOUS ACTION TAKEN:

The item was presented to the Committee on Academic Policy and Programs on November 1, 2016 for information. The Committee was satisfied with the Dean's Administrative Response.

HIGHLIGHTS:

The *Cyclical Review Protocol* "is used to ensure University of Toronto programs meet the highest standards of academic excellence" (UTQAP, Section 5.1). The *Protocol* applies to all undergraduate and graduate degree programs offered by the University, and the University's full complement of undergraduate and graduate degree and diploma programs are reviewed on a planned cycle. Reviews are conducted on a regular basis, and the interval between program reviews must not exceed 8 years.

The external review of academic programs requires:

- The establishment of a terms of reference;
- The selection of a review team;
- The preparation of a self study;
- A site visit;
- Receipt of a report from the external review team;
- The preparation of a summary of the review report;
- The Vice-Provost, Academic Programs' formal request for an Administrative Response;
- The Dean and Vice-Principal Academic's formal Administrative Response; and
- Preparation of a Final Assessment Report and Implementation Plan.

In accordance with the *Protocol*, an external review of the Graduate Department of Physical and Environmental Sciences and its programs, was conducted in the 2015-16 academic year:

The review team met with a wide array of stakeholders including UTSC senior academic administrators, the Graduate Chair, heads of cognate units, and faculty, staff and students in the Department. The reviewers were very impressed by the high quality of the Department's programs and research, as well as the exceptionally strong morale among faculty, students and staff. The reviewers also identified a number of areas they felt could be addressed, and made a series of recommendations regarding these areas.

The Campus Academic Plan, which was finalized and taken through governance during the 2015-16 academic year, highlights the importance of graduate education and program development. The goals outlined in the plan, which include clarifying the role of Chairs of graduate units, will be central to the Graduate Department's ongoing planning activities.

Regarding curriculum and program delivery: the Department has met to discuss the perception of overlap in EES3000H and EES3002H, and concluded that it is complementary in nature. Going forward, the Department will make the synergies between the two courses more explicit for students. In terms of the focus on fish and aquatic habitats in the Conservation and Biodiversity field, the Department notes they are making a conscious effort to balance perspectives, and planned future hires will resolve this concern. The Department is aware of the heavier workload in the first semester of the

Climate Change Impact Assessment field, but notes the courses have been carefully sequenced to ensure students are well placed for internships in the second semester. The Department is aware that there are fewer field trips in the Climate Change Impact Assessment field and points out that this because it is focused on climate modeling and data analysis, thus fieldtrips are pedagogically less relevant; nevertheless, the Department is working hard to incorporate more experiences for students. The Department is exploring ways to actualize team teaching opportunities in ways that are consistent with the best pedagogy. The Department has invited the geosciences faculty to submit a proposal to introduce a new field in Environmental Geoscience to the Master of Environmental Science, and will work closely with the Vice-Dean Graduate to develop a proposal for the creation of a two-year research Master's degree in Environmental Science. Finally, the Department notes that the current funding structure for the PhD (up to 5 years) works extremely well given that there is no research Master's program, but as the Department works towards the launch of a research Master's, they will revisit the funding structure for the PhD.

Regarding faculty: Although formal complement planning takes place in the undergraduate departments, the needs of the Graduate Department of Physical and Environmental Sciences can, and do, inform decision-making. Both the Department of Physical and Environmental Sciences, and the Department of Biological Sciences have new hiring lines over the next four years that will support the graduate programs.

Regarding relationships: the Graduate Chair met with the Biology faculty to discuss ways to better integrate them into the program in the short term. The role of Biology in the program over the long term will be under active discussion over the coming months. The Graduate Department of Physical and Environmental Sciences is open to developing closer ties with cognate units, and will continue to add cross-appointed faculty as the opportunity arises.

FINANCIAL IMPLICATIONS:

There are no net financial implications to the campus' operating budget.

RECOMMENDATION:

Presented for information.

DOCUMENTATION PROVIDED:

1. External Reviewers Report (May 2016)
2. Provostial Summary of the External Review Report (Final)
3. Provostial Request for Administrative Response (June 30, 2016)
4. Dean's Administrative Response (October 3, 2016)

UTQAP Cyclical Review
Graduate Department of Physical and Environmental Sciences, UTSC Review Report

Program(s) under review:	Environmental Science: Doctor (PhD); Professional Master (MEnvSc)
Department under review:	Graduate Department of Physical and Environmental Sciences, University of Toronto
Commissioning Officer:	Professor Rick Halpern, Dean and Vice-Principal (Academic)
Date of review:	March 31 – April 1, 2016
Reviewers:	Edward Nater, John Smol, Philippe Van Cappellen

Note: the review report follows the Terms of Reference of the cyclical review process.

1 Program(s)

Objectives:

- The consistency of the program with the University's mission, the University of Toronto Scarborough's current Strategic Plan and the Department's academic plans.

  The new MEnvSc (launched in 2006) and PhD programs (launched in 2010) in Environmental Science are consistent with the University's mission, UTSC Strategic Plan and the Department academic plan. The MEnvSc program fills a unique niche within the 3-campus UT system, and has been very successful in responding to the growing demand for professional MSc graduates in the environmental area. The MEnvSc program is singled out as a highlight in UTSC's 2014 Strategic Plan.

Admission requirements:

- The appropriateness of admission requirements in relation to the learning outcomes of the program.

  The graduate students the reviewers spoke to were generally very satisfied with the program and none raised issues regarding the admission requirements. The reviewers

agreed that the requirements are appropriate. Our view was that if the admission requirements are too lax for the rigor of the program, students often have difficulty with courses in their first year. Likewise, if admission requirements are too high related to the rigor of the program, students are often bored in their first year in the program. Neither opinion was expressed during our meeting with the graduate students, suggesting that the admission requirements are appropriate for the program.

Curriculum and program delivery:

- How the curriculum reflects the current state of the discipline or area of study.

  The three MEnvSc fields of study, BITAS, CB and CCIA, appear to be equally successful in attracting students by offering challenging and timely professional training. Together, the three fields cover all the major current topics in contaminant fate and transport, remediation, conservation and biodiversity, and climate adaptation.

  The PhD program is a small, but a growing program at UT. The PhD study areas identified in the self-study overlap with and extend those of BITAS and CCIA, but not CB. Whether or not to involve Biology faculty more in the PhD program is recognized as an issue that requires attention. The reviewers urge GDPES to address this issue sooner, rather than later.

- The appropriateness of the program's structure, curriculum and length to its learning outcomes and degree level expectations.

  At one year, the MEnvS program is an appropriate length for the material that is covered and the expectations of the program. PhD students are guaranteed funding for up to 5 years. The reviewers recommend this time period be reduced to 4 years, which is the norm for almost all PhD programs in Canada and the US. Our general feeling was that offering 5 years of support may simply extend the length of the PhD program, with little gain for the student.

- Evidence of innovation or creativity in the content and/or delivery of the program relative to other such programs.

  The CCIA stream of the MEnvSc program is, to the reviewers' knowledge, the first program of its kind in Canada. It fills an important niche that is otherwise not being addressed. The strong environmental chemistry focus of the MEnvSc BITAS stream and the PhD program in general distinguish these programs from most other environmental programs.

  The reviewers also note that recent faculty additions to the GDPES program reflect a willingness to expand beyond its traditional strengths and explore new, interdisciplinary avenues of graduate study and research (e.g., at the intersection between environment and material science, and at the science-policy interface).

- What opportunities are there for student learning beyond the classroom.

  Students in the BITAS and CB streams have ample opportunities for laboratory experiences and field trips. At the moment, there are fewer such opportunities for students in the CCIA stream, but the instructors for the stream are developing plans for field trips for this stream as well (e.g., field trips to northern and/or coastal communities). The reviewers support this initiative, given the crucial importance of community-level partnerships and engagement in climate adaptation practice. Overall, the MEnvSc program offers excellent internship opportunities, which are often great learning experiences and in many cases lead to job offers upon graduation.

- What opportunities are there for student research experience.

  All MEnvSc students can opt to undertake a research paper, but most prefer to take an internship instead.

Assessment of learning:

- The appropriateness and effectiveness of the methods used for the evaluation of student achievement of the defined learning outcomes and degree level expectations.

  The evaluation methods were not discussed in any detail during the reviewers' visit. The methods described in the Self-Study are those applied in comparable programs in Canada and the USA and seem appropriate and adequate.

Quality indicators:

- An assessment of the programs against international comparators.

  While it is too early to establish a true ranking of this program, it is obvious that it compares favorably against the majority of programs in environmental sciences in North America.

  Noteworthy is that the MEnvSc CCIA stream and the PhD program are able to attract large numbers of international applications.

- The quality of applicants and admitted students.

  As the programs are relatively new, it is difficult to make a detailed assessment of the quality of the applicants and admitted students. For the PhD program, the reviewers note that the standard quality indicators (e.g., papers produced, awards received), as well as discussions with individual faculty members indicate that the PhD students are of high quality.

- Student completion rates and time to completion.

  Because only a few students have completed the PhD program so far, it's too early to tell if the students are meeting expectations, but it appears that the first few students have been on track. As noted above, the reviewers recommend that the duration of the PhD should be reduced from 5 years to 4 years (the norm at most universities in North America).

- The quality of the educational experience and teaching.

  The vast majority of the opinions expressed by the students were very positive, which would indicate that the overall experience is very positive. Three minor issues were raised regarding aspects of the MEnvSc program.
    - *The first concerned two mandatory courses in the CB stream (EES3000H Applied Conservation Biology and EES3002H Conservation Policy) that, at least according to some students, exhibit excessive content overlap.*
    - *The second concerned the CB stream, where some students felt that most of the examples used to explain concepts focus on fish or aquatic habitats. At least some of the students felt that the examples could be broadened to include other animals, plants, and terrestrial habitats.*
    - *The third issue concerned the coursework workload balance in the CCIA stream between the first and second semesters. Students noted that the majority of the courses with the highest workloads were in the fall semester, and they would welcome a better distribution of the workload.*

  A general complaint from students (and faculty and administrators!) is the time-consuming commute and poor transit service between UTSC and the other UT campuses, in particular the downtown campus. This complicates managing course attendance with TA-ships, and diminishes the advantages of belonging to a large and diverse research and education community.

- The implications of any data (where available) concerning post graduation employability.
  Not applicable to our review.

- Availability of student funding.

  Funding for the PhD appears excellent, with student support guaranteed for 5 years. It remained unclear to the reviewers how much financial aid was available for students in the MEnvSc Program.

- Provision of student support through orientation, advising/mentoring, student services.

  The student support for the program is exceptionally good. The student services staff is to be commended for their dedication to the students and the program and their strong service orientation.

- Program outreach and promotion.
  Not applicable to our review.

2 Faculty/Research

- The scope, quality and relevance of faculty research activities.

  Research conducted in DPES is appropriate for the graduate program. Much of the research addresses real world environmental problems that are relevant to society. The research activities are supported by excellent laboratory facilities, in particular in areas of environmental analytical chemistry. The NMR centre, for example, is one of the top labs of its kind in the world.

- The appropriateness of the level of research activity relative to national and international comparators.

  The faculty perform at a high level. The overall publication record is excellent. Most senior faculty are still highly productive, which is not always the case in many departments. The research productivity of DPES would rank in the upper third of comparable departments in the US and Canada.

  In fact the reviewers noted that a more aggressive campaign by the administration for putting faculty forward for awards, such as FRSC etc., may be appropriate.

- Appropriateness of research activities for the undergraduate and graduate students in the Faculty .

  (Note: Undergraduate research activities were not directly addressed during the review.)

  Although some faculty members have successfully involved MEnvSc students in their research activities, the 1-year MEnvSc program is not designed around research, but rather focuses on the acquisition of practical knowledge and skills for direct integration in the workforce. Many of the faculty members expressed a desire to create an additional, regular 2-year research (thesis) MSc degree. With a dynamic, relatively young core group of faculty members and a growing, and thus far successful, PhD program, this is a logical step forward. While the reviewers in principle support the development of a 2-year research MSc program, they also strongly recommend that this should be done following a broad-based consultation with all concerned faculty and cognate academic units, in order to (a) clearly differentiate the program from the current 1-year professional MEnvSc, and (b) optimize its complementarity with other MSc programs being considered at UT, in particular the master's degree in environmental studies in the School of Environment.

- Faculty complement plan.

The faculty complement plan was not discussed in great detail during the meetings. However, it is described in the Academic Plan. In the reviewers' opinion, the plan would benefit from an in-depth SWOT analysis. Possibly, the department should consider organizing a mini-retreat to collectively assess in what directions the program is growing, what opportunities and threats exist for collaboration and partnerships, what emerging areas of research could be captured, etc. Based on this reflection, a more precise and fully justified complement plan could be formulated.

3 Relationships

- Strength of the morale of faculty, students and staff.

Overall, the morale is very high. The DPES faculty are strongly engaged in the graduate program and want it to be successful. Several faculty members commented on the fact that the new PhD program has improved their ability to recruit high quality graduate students. The students in GDPES also have very positive things to say about the program. The staff are highly devoted to the program and committed to helping students succeed. It is quite exceptional to find this high and consistent level of satisfaction across an academic unit and program.

The enthusiasm and morale of the support staff was especially noticeable. Staff took clear pride in the program and the work they have been doing to make it a success. Many noted a "sense of belonging" and "feel respected and supported".

The reviewers noted, however, some unease among the Biology faculty members in the CB stream. The CB faculty members gave an impression of feeling left out of many of the discussions and decisions made regarding GDPES. Some (if not all) of the CB faculty indicated they had never been to a GDPES faculty meeting. This issue should be addressed. Consequently, we recommend that the program hold a retreat that includes all faculty, student representatives, and key staff of GDPES in the near future, to fully engage the CB component of the MEnvSc program and explore ways to more closely integrate the three streams, for example through the development of joint courses. One suggestion is to explore the possibility of a course at the interface between conservation biology and climate change. (Of course the retreat could be used to address a spectrum of other issues as well.) It would also be helpful to have regular meetings of all GDPES graduate faculty, perhaps 2 or 3 times per year, to strengthen the collective ownership of the program.

- Scope and nature of relationships with cognate academic units.

GDPES appears to have good relations with cognate academic units. All of the chairs we met with expressed positive comments about the program. Communication and consultation

seem to work well. Possibilities to more closely involve some of the cognate units could be further explored (e.g., with the faculties of Forestry and Applied Science and Engineering). Given the plans for new graduate programs in the School of the Environment, it will be important to avoid duplication and coordinate marketing and delivery of the programs.

- Extent to which the Department has developed or sustained fruitful partnerships with other universities and organizations in order to foster research, creative professional activities and to deliver teaching programs.

  The reviewers are obviously not aware of all of these relationships. Individual faculty members maintain strong research collaborations with other universities and institutes. Noteworthy are the good relationships the department and GDPES program have developed with some of the consulting companies in the Greater Toronto Area, as well as with relevant government labs and agencies (e.g., Environment Canada, DFO, MOECC, others). Numerous students have internships with these companies and agencies, and at least two graduates of the program, who are now consulting professionals, teach courses in the BITAS stream. The internship program is a great vehicle for further strengthening these relationships in the future.

- Scope and nature of the Department's relationship with external government, academic and professional organizations.

  We believe we addressed some of these issues in the previous point.

- Social impact of the Department in terms of outreach and impact locally and nationally.

  The MEnvSc program fills a need for well-trained, environmental professionals, which has a positive impact on the local economy and employment.

4 Organizational and Financial Structure

- The appropriateness and effectiveness of the Department's organizational and financial structure.

  Up to 2012, the graduate programs were overseen by the DPES Department Chair. Since then, this task has been taken over by a Graduate Chair. This reorganization seems appropriate given the rapid growth of the graduate programs. The collaboration between the Department Chair and Graduate Chair is excellent. The reviewers urge the Graduate Chair to consider how to more closely involve the CB stream faculty members in the entire GDPES program.

- The appropriateness with which resource allocation, including administrative and technical staff, space and infrastructure support, has been managed.

The allocation of resources appears well balanced between tenure-stream faculty, non tenure-stream and sessional instructors, administration, and staff. The faculty members receive very good support from the administrative and technical staff, which greatly improves their research and teaching capacity, efficiency and productivity. The new Environmental Science and Chemistry Building significantly adds to the visibility, cohesion and appeal of DPES and GDPES.

- Opportunities for new revenue generation.

  The GDPES program has a rapidly growing number of alumni, many of whom are moving directly into jobs in the private and public sectors. The potential for alumni events should be explored as these may, in the long run, provide direct and indirect (e.g., via paid internships) sources of revenue.

5 Long-range Planning Challenges

- Consistency with the University's academic plan.

  The success of the MEnvSc program reflects the societal demand for skilled environmental science practitioners. The UTSC-based graduate department has shown it is able to respond quickly to such external opportunities. The MEnvSc program will likely serve as a blueprint for other post-graduate professional programs at University of Toronto.

- Appropriateness of:

  - Complement plan, including balance of tenure-stream and non-tenure stream faculty;

    The hires described in the complement plan seem adequate, but not particularly exciting. Now that the department and graduate program are established and successful, this would be a good time to internally evaluate which aspects of the program have been most successful, which need improvement or change, what are unmet opportunities and what are potential threats before committing to new tenure-stream hires. As noted before, one possibility is to have a faculty retreat organized on this topic. A professional mediator could help facilitate a SWOT analysis to more strategically delineate the areas in which to target new tenure-track hires. Given the relatively small size of the department, it may be more appropriate to identify new, emerging interdisciplinary research areas in which the department can make its mark, rather than to try to fill all (sub-)disciplinary "holes".

    There are several areas in the teaching program that need strengthening and could, at least in part, be filled with non-tenure stream faculty or through collaboration with other programs/departments.

- Enrolment strategy;
  Seems appropriate.

- Student financial aid;
  Seems appropriate.

- Development/fundraising initiatives;
  The potential of using the growing Alumni base for program development and generating revenue should be explored sooner rather than later.

- Management and leadership.
  See section 4 (appropriateness and effectiveness of the Department's organizational and financial structure).

6 International Comparators

- Assessment of the Department and the program(s) under review relative to the best in Canada/North America and internationally, including areas of strength and opportunities.

  It is probably too early to rank the program, but it compares well with most other Environmental Science graduate programs in North America.

7 Conclusions and Recommendations

The reviewers would like to thank the faculty, staff and students of DPES and GDPES for the open-minded and constructive discussions during their 2-day visit. They also appreciate the detailed and comprehensive materials provided prior to the visit, as well as the flawless organization and timing of the various on-site meetings.

Overall, the reviewers are very positive about the remarkable achievements of the Department and Graduate Department. The department houses a relatively young, productive and collegial faculty, supported by a dedicated administrative and technical staff. The new MEnvSc and PhD programs have grown rapidly and fill important niches within the University of Toronto. They represent a significant increase in the graduate education and research capacity of UTSC. The MEnvSc program offers a blueprint on how to develop a successful professional master's program that will likely be emulated within the University and at other institutions.

Concerning the graduate program, there are a few issues that we believe require attention. These have already been identified in the text above. The three most important ones are the following.

1. Our impression was that the Biology faculty members of the CB stream are generally in favour of "repatriating" the CB stream to Biology. According to the CB faculty members the reviewers

met, this is in line with the agreement made when the CB stream was initiated, and in which GDPES was to be the temporary home of CB. However, the reviewers feel that part of this desire may be fuelled by the perception among the CB faculty that they are largely excluded from the decision-making process in GDPES. In the reviewers' opinion, the removal of the CB stream would not be in the interest of the GDPES program, as biology is a foundational component of any environmental sciences program. In addition, it may not be advantageous to the CB program either as it would lose the excellent administrative support and visibility it enjoys through GDPES. There is thus much to gain from an inclusive participation of Biology faculty members in GDPES. The reviewers strongly recommend that GDPES addresses this issue head-on through open discussions, and identify ways to enhance the synergies between the three streams – BITAS, CB and CCIA.

2. The geoscience faculty members the reviewers met expressed the need for an environmental geoscience stream within the MEnvSc program. Such a stream could capitalize on the recent increases in undergraduate enrolments in geosciences nationally, and from geoscience professionals seeking retraining following the slow-down of the energy resources sector. The reviewers recommend that the geoscience faculty be given the opportunity to present a detailed proposal for a fourth stream to the MEnvSc program, followed by an objective assessment of the pros and cons of such an addition. Obviously, the decision to move forward or not with an environmental geoscience stream has implications for the prioritization of future faculty hires.

3. Many of the DPES faculty members would like to see the introduction of a 2-year research MSc. This is a reasonable and logical request given the growth of the research programs within the department. The reviewers are supportive of such a development, as long as it does not come at the expense of the 1-year professional MEnvSc. The latter is a key asset that DPES must continue to nurture to the fullest.

The following are some additional suggestions and recommendations.

1. A modest investment in video-conferencing and distance learning equipment may help alleviate some of the problems associated with the time-consuming commute between the UTSC and downtown campuses. In particular, faculty and students should be able to remotely participate to seminars, and portions of some courses could be offered through distance learning.

2. The number of team-taught courses in the program is relatively low in comparison to other environmental science programs. Team-taught courses are common in environmental sciences programs, due to the breadth of subject matter in some courses and the (usually) somewhat narrower knowledge base of individual faculty. When asked about this, faculty indicated they were unsure if they would get credit for teaching team-taught courses, which may be part of the reason for the low numbers. The reviewers see added value in developing more team-taught courses (e.g., a climate change-conservation biodiversity course), but this requires that policies regarding team taught courses be clarified, or that such policies be developed if they do not currently exist.

3. The faculty complement plan would benefit from a critical re-evaluation. As it stands, the plan seems to be driven primarily by the desire to fill missing teaching capacity, some of which may be accommodated by involving existing faculty in cognate academic units. The reviewers recommend a more strategic approach, where new hires would allow DPES to grow further while differentiating itself from other national programs in the environmental area. A possible avenue to pursue is the contaminant-health-climate change nexus.

3. Several faculty commented on the loss of the technician in the workshop servicing the UTSC campus community. Many would greatly like to see a replacement, as they have used the workshop in the past and relied on it to help design and construct research equipment. The latter is particularly important for field-based environmental research activities. We recommend that the position be replaced.

In summary, the reviewers were very impressed with the graduate department and its programs.

Submitted by:

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April 25, 2016

UTQAP Review Summary

Programs Reviewed:	Environmental Science, MEnvSc, PhD
Division/Unit Reviewed:	Graduate Department of Physical and Environmental Sciences
Commissioning Officer:	Vice-Principal Academic and Dean, UTSC
Reviewers:	1. Prof. Edward Nater, PhD, Department of Soil, Water and Climate, University of Minnesota 2. Prof. John Smol, PhD, Department of Biology, Queen's University 3. Prof. Philippe Van Cappellen, PhD, Department of Earth and Environmental Sciences, University of Waterloo
Date of review visit:	March 31 – April 1, 2016

Previous Review

n/a

Last OCGS Review Dates: MEnvSc, 2008. PhD approved to commence, 2010.

Current Review: Documentation & Consultation

Documentation Provided to Reviewers:

- Documentation about the university: UTSC Strategic Plan, 2014-15 to 2018-19; UTSC by the Numbers.
- Documents about the review process: Terms of Reference; Site Visit Schedule
- Documents about the department: Unit Academic Plan, April 2015; Unit Self Study, March, 2016;
- Documents about programs and courses: Description of Programs, 2015-16 School of Graduate Studies Calendar; Description of Courses; Course outlines/syllabi;
- Faculty CVs, including core faculty, cross-appointed faculty, and adjunct/status-only faculty.

Consultation Process:

The reviewers met with the following groups: the Vice-Principal Academic and Dean, Vice-Dean Undergraduate, Assistant Dean Academic, UTSC Campus Graduate Administrator, and Academic Programs Officer; Vice-Principal Research; heads of cognate units including FAS, the Dept. of Chemistry, FASE, the Dept. of Earth Sciences, the Dept. of EEB, the Dept. of Geography

and Planning, the Faculty of Forestry, and the School of the Environment; the Graduate Chair; faculty in the BITAS area; faculty in CCIA area; faculty in the CB area; teaching-stream faculty; students in the MEnvSc and PhD in Environmental Science; technical staff; and administrative staff.

Current Review: Findings & Recommendations

1 Undergraduate Program

n/a

2 Graduate Program

Environmental Science, MEnvSc, PhD

The reviewers observed the following strengths:

- Overall quality
  - MEnvSc and PhD programs have grown rapidly and fill important niches, representing a significant increase in the graduate education and research capacity of UTSC
  - MEnvSc program offers a blueprint on how to develop a successful professional master's program
- Objectives
  - Consistent with the University's mission, UTSC Strategic Plan and the Department academic plan
  - Very successful in responding to the growing demand for professional master's graduates in the environmental area
- Admissions requirements
  - Admissions requirements are appropriate
  - Students generally satisfied with admissions requirements
- Curriculum and program delivery
  - Three fields of study appear to be equally successful in attracting students by offering challenging and timely professional training
  - Fields cover all the major current topics in contaminant fate and transport, remediation, conservation and biodiversity, and climate adaptation
  - PhD is small, but a growing program
  - MEnvSc program length is appropriate for the material covered and program expectations
  - Climate Change Impact Assessment (CCIA) field in the MEnvSc is the first of its kind in Canada, filling an important niche that is otherwise not addressed
  - Strong environmental chemistry focus of the MEnvSc Biophysical Interactions in Terrestrial and Aquatic Systems (BITAS) field of the MEnvSc and the PhD program distinguish these programs from other environmental programs

    - Ample opportunities for laboratory experiences and field trips in BITAS and CB fields
    - MEnvSc offers excellent internship opportunities, which most students choose to engage in rather than a research paper
    - Faculty desire to create an additional, regular 2-year research (thesis) MSc degree
- Assessment of learning
    - Appropriate and adequate, comparable to programs in Canada and the USA
- Quality indicators
    - Compares favorably against the majority of programs in environmental sciences in North America
- Enrolment
    - MEnvSc CCIA field and the PhD program attract large numbers of international applications
    - PhD program has improved faculty's ability to recruit high quality graduate students
- Students
    - High quality PhD students
    - Very positive student experiences
- Student funding
    - Guaranteed PhD funding for up to five years

The reviewers identified the following areas of concern:

- Curriculum and program delivery
    - Lack of clarity around Biology faculty's involvement in the CB field of the MEnvSc program
    - Fewer field trip opportunities for students in the CCIA field, though this is being addressed by faculty
    - Mandatory courses in the Conservation Biology field (EES3000H Applied Conservation Biology and EES3002H Conservation Policy) have excessive content overlap
    - Most of the examples used to explain concepts in the CB field focus on fish or aquatic habitats
    - Uneven coursework workload balance in the CCIA field between the first and second semesters
    - Number of team-taught courses in the program is relatively low in comparison to other environmental science programs
    - Removal of the CB field would not be in the interest of the MEnvSc program, as biology is a foundational component of any environmental sciences program
- Student funding
    - Unclear if five years of funding produces additional benefits

The reviewers made the following recommendations:

- Curriculum and program delivery
    - Address issue of incorporating Biology faculty in the MEnvSc program
    - Offer more field trips in the CCIA field, given the crucial importance of community-level partnerships and engagement in climate adaptation practice
    - Engage in broad-based consultation with all concerned faculty and cognate academic units in the development of a two-year MSc in order to clearly differentiate the program from the current 1-year professional MEnvSc, and (b) optimize its complementarity with other MSc programs being considered at UT, in particular the master's degree in environmental studies in the School of Environment
    - Develop more team-taught courses (e.g., a climate change-conservation biodiversity course), and clarify policies regarding team taught courses
- Student funding
    - Reduce student funding for the PhD program from up to five years to four, which is the norm for almost all PhD programs in Canada and the US

3 Faculty/Research

The reviewers observed the following strengths:

- Overall quality
    - Productive and collegial faculty, supported by a dedicated administrative and technical staff
    - Recent faculty additions reflect a willingness to expand beyond traditional strengths and explore new, interdisciplinary avenues of graduate study and research
- Research
    - Addresses real world environmental problems that are relevant to society
    - Supported by excellent laboratory facilities, in particular in areas of environmental analytical chemistry
    - NMR centre is one of the top labs of its kind in the world
    - Research productivity ranks in the upper third of comparable departments in the US and Canada
    - Research conducted is appropriate for the graduate program
- Faculty
    - Highly productive faculty with excellent publication records

The reviewers identified the following areas of concern:

- Faculty

- Biology faculty members in the CB field of the MEnvSc feel left out of many of the discussions and decisions; some CB faculty indicated they had never been to a faculty meeting
- Complement plan seems adequate but could benefit from a more strategic approach

The reviewers made the following recommendations:

- Research
  - Administration should engage in a more aggressive campaign for putting faculty forward for awards, such as FRSC etc.
- Faculty
  - Engage critical re-evaluation of the faculty complement plan
    - Consider holding a retreat to engage in a SWOT analysis
    - Evaluate which aspects of the program have been most successful, which need improvement or change, what are unmet opportunities and what are potential threats before committing to new tenure-stream hires
    - Identify new, emerging interdisciplinary research areas in which the department can make its mark, rather than to try to fill all (sub)disciplinary "holes"
    - Make new hires that would allow GDPES to grow further while differentiating itself from other national programs in the environmental area, possibly through the contaminant-health-climate change nexus
  - Hold a retreat that includes all faculty, student representatives, and key staff of GDPES in the near future, to fully engage the CB component of the MEnvSc program and explore ways to more closely integrate the three streams
  - Hold regular meetings of all GDPES graduate faculty to strengthen the collective ownership of the program
  - Strengthen the teaching program through non-tenure stream faculty or through collaboration with other programs/departments

4 Administration

The reviewers observed the following strengths:

- Relationships
  - Morale is very high
  - Exceptionally high and consistent levels of satisfaction
  - Good relations with cognate academic units
  - Individual faculty members maintain strong research collaborations with other universities and institutes
  - Noteworthy relationships with consulting companies in the Greater Toronto Area, as well as with relevant government labs and agencies

    - MEnvSc program fills a need for well-trained, environmental professionals, which has a positive impact on the local economy and employment
    - Rapidly growing number of alumni, many of whom are moving directly into jobs in the private and public sectors
- Organizational and financial structure
    - Staff are highly devoted to the program and committed to helping students succeed.
    - Notable enthusiasm and morale of staff, who take clear pride in the program and the work they have been doing to make it a success
    - Reorganization seems appropriate given the rapid growth of the graduate programs
- Planning / Vision
    - MEnvSc program will likely serve as a blueprint for other post-graduate professional programs at University of Toronto
- Reputation / Profile
    - Compares well with most other Environmental Science graduate programs in North America.

The reviewers identified the following areas of concern:

- Relationships
    - Given the plans for new graduate programs in the School of the Environment, it is important to avoid duplication and coordinate marketing and delivery of the programs
- Organizational and financial structure
    - Time-consuming commute and poor transit service between UTSC and the other campuses complicates managing course attendance with TA-ships, and diminishes the advantages of belonging to a large and diverse research and education community
    - Workshop technician is needed to help design and construct research equipment

The reviewers made the following recommendations:

- Relationships
    - Explore further possibilities to more closely involve some of the cognate units (e.g., Faculties of Forestry and Applied Science and Engineering)
    - Use the internship program as a vehicle for further strengthening relationships with external organizations
    - Explore potential alumni events, which may, in the long run, lead to direct and indirect sources of revenue
- Organizational and financial structure
    - Consider how to more closely involve the CB stream faculty members in the MEnvSc program

- Make a modest investment in video-conferencing and distance learning equipment to help alleviate some of the problems associated with the time-consuming commute between the UTSC and downtown campuses
- Find a replacement for the workshop technician

ADMINISTRATIVE RESPONSE – Appended

UNIVERSITY OF TORONTO

OFFICE OF THE VICE-PROVOST,
ACADEMIC PROGRAMS

June 30, 2016

Professor William Gough
Dean and Vice-Principal Academic
University of Toronto Scarborough (UTSC)

Dear Prof. Gough,

Thank you for forwarding the report of the March 2016 External Review of the Graduate Department of Physical and Environmental Sciences and its graduate programs (M.Env.Sc, Ph.D.).

As indicated in our *Statement of Institutional Purpose*, the University of Toronto is committed "to being an internationally significant research university, with undergraduate, graduate, and professional programs of excellent quality." This quality is assessed through the periodic appraisal of programs and units, which considers how our research, scholarship and programs compare to those of our international peer institutions and assesses the alignment of our programs with established Degree Level Expectations. The University views the reports and recommendations made by external reviewers as opportunities to celebrate successes and identify areas for quality improvement.

The reviewers found the Master of Environmental Science program to be very strong. They noted that faculty perform at a high level with an excellent publication record. They found the departmental atmosphere to be very positive, with excellent morale, exceptionally good student support, and enthusiastic staff.

I am writing at this time to request your administrative response to this report and your thoughts on a timeline for implementing recommendations. In July, my office will forward a summary of the review report for comment.

Specifically I would ask you to address the following areas raised by the reviewers, along with any additional areas you would like to prioritize:

Curriculum & Program Delivery

- The reviewers made recommendations to enhance the strong professional master's program, by eliminating content overlap, balancing the intensity of requirements, and offering sufficient experiential learning opportunities in all fields.
- The reviewers recommended that the faculty in geoscience be given an opportunity to present a proposal to add Environmental Geoscience as a fourth field.
- The reviewers encouraged the department to explore opportunities for team teaching, to reflect the breadth and interdisciplinary nature of the programs.

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- The reviewers endorsed the department's plans for the creation of a two-year research master's degree, but they recommended that the department engage in broad-based consultations with all faculty and with cognate units.
- The reviewers recommended that the guaranteed funding for PhD students be reduced from "up to 5 years" to 4 years.

Faculty

- The reviewers recommended that the department revisit its complement plan and hire strategically in emerging areas.

Relationships

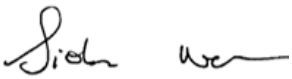
- The reviewers encouraged the department to find ways to better include all faculty in decision making, especially those in biology.
- The reviewers recommended that the department explore closer involvement with cognate units, specifically the Faculty of Forestry and the Faculty of Applied Science and Engineering

In terms of next steps, reviews of academic programs and units are presented to University governance as a matter of University policy. Under the *University of Toronto Quality Assurance Process* (UTQAP), it is the responsibility of the Vice-Provost, Academic Programs to prepare a Report on all program and unit reviews and submit these biannually to the Committee on Academic Policy and Programs (AP&P). The summary of the external review of the graduate programs offered by the Graduate Department of Physical and Environmental Sciences will be considered by AP&P at its meeting on November 1, 2016. Your presence at this meeting is important and will allow you to respond to any questions the Committee may have regarding the report and your administrative response and plan for implementing recommendations. The implementation plan should identify changes to be accomplished in the immediate (6 months), medium (1-2 years) and longer (3-5 years) terms, and who (Department, Dean) will take the lead in each area. AP&P may either conclude that there are no substantive issues that need to be dealt with or recommend that the Vice-Provost, Academic Programs bring forward a follow-up report in a year.

I would appreciate receiving your completed administrative response and plan for implementing recommendations, as well as any comments on the summary by October 3, 2016. This will allow my office sufficient time to prepare materials for the AP&P meeting. At the same time, we will work closely with you to develop a summary of the review's outcomes, including plans for implementing recommendations, appropriate for posting on the University's Quality Assurance web site as required by the UTQAP.

Please feel free to contact me or Justine Garrett, Coordinator, Academic Planning and Reviews, should you have any questions.

Sincerely,



Sioban Nelson
Vice-Provost, Academic Programs

cc.
Daniella Mallinick, Director, Academic Programs, Planning and Quality Assurance
Justine Garrett, Coordinator, Academic Planning and Reviews
Lesley Lewis, Assistant Dean, Academic, UTSC
Annette Knott, Academic Programs Officer, UTSC

UNIVERSITY OF
TORONTO
SCARBOROUGH

OFFICE OF THE VICE-PRINCIPAL ACADEMIC & DEAN

2 March 2016

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

Dear Sioban,

Administrative Response:
External Review of the Department of Philosophy and its Programs

Thank you for your letter of February 12, 2016 requesting my administrative response to the external review of the Department of Philosophy and its programs [B.A. (Honours): Specialist, Major, Minor]. I appreciate the seriousness with which the reviewers approached the external review process, and am grateful for the careful consideration they have given to the unit and the programs. I note with pleasure that the reviewers characterize UTSC Philosophy as "a strong department with upward momentum," and acknowledge the Department's ambition to become "an important locus of expansion within the broader Toronto philosophy community."

The external review report was sent to the Chair of the Department to be shared widely within the academic unit. The decanal group, including myself, the Vice-Dean, Undergraduate, and Assistant Dean, Academic, met with the Department on February 29, 2016 to discuss the external review, and the recommendations from the review report. I am pleased with the depth of the discussion that has taken place. We are taking the recommendations of the reviewers seriously and already have begun to act upon them.

As you may know, the UTSC campus has been actively engaged in an academic planning process. As part of this process, all of the academic units, the Centre for Teaching and Learning, and the Library submitted departmental academic plans, and the Campus Academic Plan is close to completion. Many of the initiatives included in the campus plan – strategic enrolment management, curriculum mapping, ensuring students develop strong communication skills, and developing alumni outreach – speak directly to the recommendations made by the external reviewers.

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Let me address now the specific points raised in your letter:

Curriculum and Program Delivery:

- The reviewers made a number of observations regarding curricular improvements and coverage, including the frequency, variety and availability of offerings, especially at the upper levels.

The Department has embraced the reviewers' recommendations to expand PHLB99H3 (Writing for Philosophy), and introduce tutorials to PHLB55H3 (Puzzles and Paradoxes). The Dean's Office will work with the Department to carry out these recommendations.

The reviewers recommended the Department expand its offerings in logic, critical thinking, formal methods, ethics, and value theory, and pointed to perceived gaps in the Department's offerings, including history of philosophy – particularly ancient philosophy, and non-analytic philosophy. They also recommended the Department provide additional structure in the program by clearly identifying two or three B-level core courses that all students must take, and consider developing web-based or blended courses that combine face-to-face lectures with online support. The Department is currently reviewing these recommendations, and their Curriculum Committee will discuss them further in the next term. We believe that curriculum mapping will enable the Department to make informed decisions about next steps regarding these, and other, reviewer recommendations.

- The reviewers stated that students would benefit from more research opportunities.

The reviewers recommended several ways to enhance the Department's undergraduate research profile in ways that involve the graduate students, including: expanding a successful undergraduate conference into a modest colloquium series run by the graduate students and the Departmental Student Association; inviting graduate students to give talks; and inviting graduate students to participate in professional development events for undergraduates. The Department has embraced the reviewers' recommendations, and will follow up on them.

Relationships:

- In order to better serve student needs and enhance interdisciplinary offerings, the reviewers emphasized the need for the Department of Philosophy to build stronger links with cognate departments and alumni.

The Department is in the early stages of reviewing the feasibility of developing multi-disciplinary programs with other departments at UTSC, including programs in Cognitive Systems and in Philosophy, Political Science and Economics. Another possibility is Philosophy and Law. They will consult with potential partner units, including Computer and Mathematical Sciences, Political Science, Psychology, and Management in due course.

Faculty:

- The reviewers encouraged reflection on the faculty complement and the types of appointments in the Department, given the tri-campus context and the need to clearly articulate priorities for UTSC.
- The reviewers expressed concern about the Department's reliance on sessional faculty.

The reviewers' recommendations include that the Department develop a comprehensive long-term strategy for hiring. This strategy would consider questions like: where does the Department want to be in five years; does the Department want to build to existing strengths or create new strengths; and how would future appointments serve both the tri-campus department of Philosophy and build relationships within UTSC? The Department's academic plan does address the need for new faculty complement, based on the department's priorities in undergraduate teaching, and on its contribution to the tri-campus graduate program. They have requested two additional tenure stream positions, one in Ancient Philosophy and another in Value Theory. The current campus five-year complement plan includes a tenure stream search for the former in 2017-18.

With regard to the reliance on stipendiary instructors, a review of the data shows that the proportion of Philosophy courses taught by stipendiary instructors is slightly below the campus average. The campus is committed to increasing the overall faculty complement not only in order to reduce the faculty to student ratio, but also to strengthen and expand our research and teaching expertise.

- The reviewers encouraged the Department to seek greater participation in SSHRC grant competitions through better cooperation with the UTSC VP Research.

To encourage faculty to apply for SSHRC grants, the Chair has instituted a SSHRC incentive program under which research funds would be provided to any unsuccessful applicant for a SSHRC grant, subject to certain stipulations. The Vice-Principal, Research has agreed to a double-match of the Department's contribution. The Department also has begun, and plans to continue, expanding its efforts to nominate faculty for awards.

- The reviewers recommended ways in which faculty could be better supported, including through the clarification of policies and procedures for tenure, promotion, hiring, and funding.

The Chairs of the three University of Toronto Philosophy departments are working together to develop a document that will detail existing governance and consultation practices at the tri-campus and graduate levels. The Chair of the UTSC Department will produce a separate document for this campus. The Chair notes that there are already practices in place to encourage faculty to provide input into hiring decisions, including: inviting faculty to review CVs and written work of candidates, encouraging faculty to attend job talks and to read any publically available work, and inviting faculty to address search committees. These practices can be reinforced.

Regarding the recommendation that the Chair meet with all pre-tenure faculty: the Chair is strongly in favour, and has moved to implement this recommendation at the end of this term.

Resources and Planning:

- The reviewers noted that additional shared staff may be beneficial to program functioning, as would a move to a permanent physical space.

The Department of Philosophy shares staff with two other academic units, and all three unit heads have expressed the need for additional staff. The Dean will ask UTSC HR Services to review the staffing needs of these units and will consider their recommendations.

Space remains a serious challenge at UTSC; however, we are very pleased with the recent completion of a campus space plan, which was developed by the Campus Architect after extensive consultation with all units on campus about their current and future space needs. Permanent space will be found for the Department of Philosophy upon completion of Highland Hall in 2017-18.

Regards,

Professor William Gough
Vice-Principal Academic and Dean (Interim)