



FOR APPROVAL

PUBLIC

OPEN SESSION

TO: UTSC Academic Affairs Committee

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DATE: March 20, 2019 for March 27, 2019

AGENDA ITEM: 2

ITEM IDENTIFICATION:

Major Undergraduate and Graduate Modification- Combined Degree Programs, UTSC Honours Bachelor of Science (HBSc) programs with the Master of Environmental Science (MEnvSc)

JURISDICTIONAL INFORMATION:

University of Toronto Scarborough Academic Affairs Committee (AAC) “is concerned with matters affecting the teaching, learning and research functions of the Campus” (*AAC Terms of Reference, Section 4*). Under section 5.6 of its terms of reference, the Committee is responsible for approval of “Major and minor modifications to existing degree programs.” The AAC has responsibility for the approval of Major and Minor modifications to existing programs as defined by the University of Toronto Quality Assurance Process (*UTQAP, Section 3.1*).

GOVERNANCE PATH:

- 1. UTSC Academic Affairs Committee [For Approval] (March 27, 2019)**

PREVIOUS ACTION TAKEN:

No previous action in governance has been taken on this item.

HIGHLIGHTS:

The Departments of Physical and Environmental Sciences (DPES) and Biological Sciences are proposing to introduce new Combined Degree Programs in Honours Bachelor of Science (HBSc) and the Master of Environmental Science (MEnvSc) offered by the Graduate Department of Physical and Environmental Sciences (GDPEs). Since every combination of degree programs is understood as a unique Combined Degree Program, this is an omnibus proposal for 10 distinct CDPs as follows:

- Combined Degree Program: UTSC, Honours Bachelor of Science, Specialist in Environmental Biology/ Master of Environmental Science
- Combined Degree Program: UTSC, Honours Bachelor of Science, Specialist (Co-operative) in Environmental Biology/ Master of Environmental Science
- Combined Degree Program: UTSC, Honours Bachelor of Science, Specialist in Environmental Chemistry/ Master of Environmental Science
- Combined Degree Program: UTSC, Honours Bachelor of Science, Specialist (Co-operative) in Environmental Chemistry/ Master of Environmental Science
- Combined Degree Program: UTSC, Honours Bachelor of Science, Specialist in Environmental Geoscience/ Master of Environmental Science
- Combined Degree Program: UTSC, Honours Bachelor of Science, Specialist (Co-operative) in Environmental Geoscience/ Master of Environmental Science
- Combined Degree Program: UTSC, Honours Bachelor of Science, Specialist in Environmental Physics/ Master of Environmental Science
- Combined Degree Program: UTSC, Honours Bachelor of Science, Specialist (Co-operative) in Environmental Physics/ Master of Environmental Science
- Combined Degree Program: UTSC, Honours Bachelor of Science, Specialist in Conservation and Biodiversity/ Master of Environmental Science
- Combined Degree Program: UTSC, Honours Bachelor of Science, Specialist in Integrative Biology/ Master of Environmental Science

A Combined Degree Program (CDP) is a program category that allows a student to be registered in two approved degree programs at the same time and complete the requirements of both in a manner that provides a benefit to the student beyond what would result from completing the two degree programs separately. Students who successfully complete one of the proposed Combined Degree Programs will have earned two University of Toronto degrees – HBSc and MEnvSc.

The proposed CDPs will enhance learning in two important ways: first, they will provide an early start to graduate studies and a reduced graduate course load; and second they provide increased access to academic training and internship opportunities by giving students the opportunity to complete an optional 2-month internship or research paper. These CDPs are particularly desirable because they address demand from undergraduate students for further training in order to improve their level of competence as

environmental practitioners, address demand from faculty for well-qualified MEnvSc candidates by recruiting the best undergraduate students to the graduate program, and will be attractive to domestic students who are looking for multiple degree paths to the undergraduate programs.

The proposed Combined Degree Programs will allow students to apply, and gain early (conditional) admission, to the MEnvSc; allow students to complete up to 1.0 FCE in graduate courses in Year 4 of their undergraduate studies that can be counted towards the completion requirements of both the HBSc degree and the MEnvSci program and degree; give students the opportunity to begin exploring their academic interests with a DPES faculty member, and their internship interests with internship coordinators in Year 4 of undergraduate studies; and create the added opportunity for CDP students to register in the MEnvSc for the Summer term between years 4 and 5 in order to complete one of two courses that will count toward the MEnvSc degree program requirements.

The proposed CDPs respond to increased demand from students for multiple degree paths, additional technical and academic training (e.g., advanced field and experimental training, increased competence in Geographic Information Systems and numerical modelling, and communication skills), and better-defined career paths. They also provide increased, and earlier, access to academic training and career development in the environmental sciences, thus allowing students to begin building the necessary skills needed to carry on graduate studies and/or professional training earlier in their academic career.

The proposed CDPs also address the broader recruitment interests of the DPES, Department of Biological Sciences, and GDPES, and their faculty, by attracting stronger domestic and international applicants to UTSC undergraduate programs, and by offering exceptional undergraduate students the opportunity to pursue graduate studies.

There has been extensive consultation about the proposed Combined Degree Programs within the DPES and GDPES and with the Department of Biological Sciences. In addition, there has been consultation with the Department of Geography (UTM), Department of Earth Sciences, and the School of the Environment. The proposal has been reviewed by the Dean's Office, the Office of the Vice-Provost, Academic Programs, and the UTSC Campus Curriculum Committee.

FINANCIAL IMPLICATIONS:

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

RECOMMENDATION:

Be It Resolved,

THAT the major modification to introduce 10 new Combined Degree Programs – HBSc and MEnvSc – as described in the proposal dated March 8, 2019 and recommended by the Vice-Principal Academic and Dean, William Gough, be approved effective Fall 2019 for the 2019-20 academic year.

DOCUMENTATION PROVIDED:

1. Major Modification to introduce Combined Degree Programs in Honours Bachelor of Science (HBSc) and the Master of Environmental Science (MEnvSc), dated March 8, 2019.

University of Toronto

Major Modification Proposal: Combined Degree Programs

Combined Degree Programs (CDPs) Proposed

	Campus	Undergraduate Program Option (Specialist in..., Major in)	Undergrad Degree	Second-Entry Undergrad Degree Program	Graduate Degree and Program (#1)	Graduate Degree and Program (#2) if applicable
1	UTSC	Specialist in Environmental Biology	HBSc		Master of Environmental Science (MEnvSci)	
2.	UTSC	Specialist (Co-operative) in Environmental Biology	HBSc		Master of Environmental Science (MEnvSci)	
3.	UTSC	Specialist in Environmental Chemistry	HBSc		Master of Environmental Science (MEnvSci)	
4.	UTSC	Specialist (Co-operative) in Environmental Chemistry	HBSc		Master of Environmental Science (MEnvSci)	
5.	UTSC	Specialist in Environmental Geoscience	HBSc		Master of Environmental Science (MEnvSci)	
6.	UTSC	Specialist (Co-operative) in Environmental Geoscience	HBSc		Master of Environmental Science (MEnvSci)	
7.	UTSC	Specialist in Environmental Physics	HBSc		Master of Environmental Science (MEnvSci)	
8.	UTSC	Specialist (Co-operative) in Environmental Physics	HBSc		Master of Environmental Science (MEnvSci)	
	UTSC	Specialist in Conservation and Biodiversity	HBSc		Master of Environmental Science (MEnvSci)	

Major Modification Proposal: Combined Degree Programs

	UTSC	Specialist in Integrative Biology	HBSc		Master of Environmental Science (MEnvSci)	
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Division:	University of Toronto Scarborough
Dean's office contact:	Annette Knott, Academic Programs Officer aknott@utsc.utoronto.ca
Department(s)/unit(s) if applicable:	Department of Physical and Environmental Sciences (DPES) Department of Biological Sciences Graduate Department of Physical and Environmental Sciences (GDPES)
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Version date of proposal: please change as you edit this proposal.	March 8, 2019

1 Summary

This is a proposal to introduce 10 Combined Degree Programs (CDPs) between the Honours Bachelor of Science (HBSc) at the University of Toronto Scarborough (UTSC) and the Master of Environmental Science (MEnvSc) at the Graduate Department of Physical and Environmental Sciences (GDPEs). Every combination of degree programs is understood as a unique Combined Degree Program (CDP), thus this is an omnibus proposal for 10 distinct CDPs. The following list of proposed CDPs presents the undergraduate program options at UTSC that may be combined with the MEnvSc:

- Combined Degree Program: UTSC, Honours Bachelor of Science, Specialist in Environmental Biology/ Master of Environmental Science
- Combined Degree Program: UTSC, Honours Bachelor of Science, Specialist (Co-operative) in Environmental Biology/ Master of Environmental Science
- Combined Degree Program: UTSC, Honours Bachelor of Science, Specialist in Environmental Chemistry/ Master of Environmental Science
- Combined Degree Program: UTSC, Honours Bachelor of Science, Specialist (Co-operative) in Environmental Chemistry/ Master of Environmental Science
- Combined Degree Program: UTSC, Honours Bachelor of Science, Specialist in Environmental Geoscience/ Master of Environmental Science
- Combined Degree Program: UTSC, Honours Bachelor of Science, Specialist (Co-operative) in Environmental Geoscience/ Master of Environmental Science
- Combined Degree Program: UTSC, Honours Bachelor of Science, Specialist in Environmental Physics/ Master of Environmental Science
- Combined Degree Program: UTSC, Honours Bachelor of Science, Specialist (Co-operative) in Environmental Physics/ Master of Environmental Science
- Combined Degree Program: UTSC, Honours Bachelor of Science, Specialist in Conservation and Biodiversity/ Master of Environmental Science
- Combined Degree Program: UTSC, Honours Bachelor of Science, Specialist in Integrative Biology/ Master of Environmental Science

The proposed Combined Degree Programs will:

- Allow students to apply, and gain early (conditional) admission, to the MEnvSc;
- Allow students to complete up to 1.0 FCE in graduate courses in Year 4 of their undergraduate studies. This 1.0 FCE in graduate courses can be counted towards the completion requirements of both the HBSc degree and the MEnvSci program and degree. Included in this 1.0 FCE is:
 - EES1133H (0.5 FCE) for students who select the Climate Change Impact Assessment field of the MEnvSc [note: this field is being renamed as Climate Change Impacts and Adaptation, effective 2019-20, and will hereafter be referred to by its new title], and 0.5 FCE chosen in consultation with the Program Supervisor;

- EES3002H (0.5 FCE) for students who select the Conservation and Biodiversity field of the MEnvSc, and 0.5 FCE chosen in consultation with the Program Supervisor.
- 1.0 FCE chosen in consultation with the Program Supervisor for students who select the Biophysical Interactions in Terrestrial and Aquatic Systems field of the MEnvSc [note: this field is being renamed as Terrestrial and Aquatic Systems, effective 2019-20, and will hereafter be referred to by its new title]
- Give students the opportunity to begin exploring their academic interests with a DPES faculty member, and their internship interests with internship coordinators in Year 4 of undergraduate studies; and
- Create the added opportunity for CDP students to register in the MEnvSc for the Summer term between years 4 and 5 in order to complete one of two courses that will count toward the MEnvSc degree program requirements. This means that over the period of the full Summer term, students will have the opportunity to complete either EES4001H Internship Training 1 (0.5 FCE), which includes a 2-month (8-week) internship opportunity; or EES4003H Academic Training 1, (0.5 FCE), which is an academic/reading course where students will write a paper. Both EES4001H and EES4003H will count toward the fulfilment of the MEnvSc degree program requirements. Students will continue to complete either the mandatory 4-month (16-weeks) internship opportunity (EES1116Y Internship; 2.0 FCEs) or academic course (EES1101Y Research Paper; 1.5 FCEs) as part of the degree program in the final summer. Students who are not in the proposed CDPs have the opportunity to complete only the mandatory 4-month academic or internship opportunity as part of the requirements of the MEnvSc program and degree.

Students who successfully complete one of the proposed Combined Degree Programs will have earned two University of Toronto degrees – HSc and MEnvSc.

The proposed CDPs respond to increased demand from students for multiple degree paths, additional technical and academic training (e.g., advanced field and experimental training, increased competence in Geographic Information Systems and numerical modelling, and communication skills), and better-defined career paths. They also provide increased, and earlier, access to academic training and career development in the environmental sciences, thus allowing students to begin building the necessary skills needed to carry on graduate studies and/or professional training earlier in their academic career.

The proposed CDPs also address the broader recruitment interests of the DPES, Department of Biological Sciences, and GDPEs, and their faculty, by attracting stronger domestic and international applicants to our undergraduate programs, and by offering our best undergraduate students the opportunity to pursue graduate studies.

2 Effective Date

- First dates students can apply to the CDPs: Fall 2019
- First date the cohort will be registered in the CDPs: Fall 2020
- First year CDP students will be unconditionally in the graduate degree program (where applicable): Fall 2021

3 Academic Rationale

The Undergraduate Departments of Physical and Environmental Sciences and Biological Sciences and the Graduate Department of Physical and Environmental Sciences are proposing to introduce 10 unique CDPs with the undergraduate Specialist/Specialist (Co-operative) programs in Environmental Science (Environmental Biology, Environmental Chemistry, Environmental Geoscience, and Environmental Physics), as well as two undergraduate Specialist programs in Biological Sciences (Conservation and Biodiversity; and Integrative Biology) and the professional Master of Environmental Science (MEnvSc). These CDPs are particularly desirable because they will:

- Address demands from undergraduate students for further training in order to improve their level of competence as environmental practitioners;
- Address demands from faculty for well-qualified MEnvSc candidates by recruiting the best undergraduate students to the graduate program;
- Provide increased access to academic training and internship opportunities by providing an optional 2-month academic or internship opportunity that will be in addition to the mandatory 4-month academic or internship opportunity completed by students in the MEnvSc alone (thus, students in the proposed CDPs can complete up to 6-months of academic or internship opportunities); and
- Attract domestic students who are looking for multiple degree paths to the undergraduate programs.

A strong intellectual synergy already exists between the identified undergraduate Specialist programs and the MEnvSc. Faculty contributions to the undergraduate curriculum and the three fields of the MEnvSci program (Terrestrial and Aquatic Systems, Climate Change Impacts and Adaptation, and Conservation and Biodiversity) support the broader DPES/Biological Sciences/GDPES mandate, which is to maintain a capacity to respond to the emerging needs of teaching and research in the physical and environmental sciences. The expertise and the intimate knowledge of the faculty in both the undergraduate and graduate programs provide DPES/Biological Sciences/GDPES with consistency and leadership in the continuing development and revision of the programs to meet the national and international demands for scientific

knowledge and skilled environmental/geoscience professionals. The proposed CDPs will directly benefit from this academic consistency.

The MEnvSc is a 12-month Professional coursework-based degree. The principal objective of the program is to develop well-trained environmental science practitioners to meet the demands of industry, government and policy organizations. Applicants to the program must have completed a science or engineering undergraduate degree and have a minimum mid-B average in the last two years of their undergraduate program. Students can earn their MEnvSci degree via a) course work plus a mandatory 4-month academic training opportunity including the submission of a Research Paper, or b) course work plus a mandatory 4-month internship opportunity including the submission of an Experience Assessment and a Research Poster. Both options provide graduates with a significant advantage at the outset of their careers.

The proposed CDPs will enhance learning in two important ways:

1. Early start to graduate studies and reduced graduate course load

Students will be able to take up to 1.0 FCE in graduate courses in Year 4 of their undergraduate studies; this 1.0 FCE in graduate courses will count towards both the HBSc degree requirements and MEnvSc program and degree requirements. These graduate courses will allow students to begin building the skills they will need to carry on graduate studies earlier in their academic career, and also to start planning earlier for their professional career.

Of the 1.0 FCE in graduate courses:

- EES1133H (0.5 FCE) will be mandatory for students who select the Climate Change Impacts and Adaptation field of the MEnvSc (research and internship streams); students will select the additional 0.5 FCE from existing MEnvSc courses in consultation with the Program Supervisor.
- EES3002H (0.5 FCE) will be mandatory for students who select the Conservation and Biodiversity field of the MEnvSc (research and internship streams); students will select the additional 0.5 FCE from existing MEnvSc courses in consultation with the Program Supervisor.
- Students who select the Terrestrial and Aquatic Systems field of the MEnvSc will select the 1.0 FCE in consultation with the Program Supervisor.

Students can also complete an optional 2-month academic or internship opportunity (0.5 FCE) in the Summer term following the completion of their undergraduate studies, which reduces the number of elective credits normally taken during the 12 months of the MEnvSc.

2. Providing an optional 2-months of academic and/or internship training (in addition to a mandatory 4-months of academic and/or internship training for the MEnvSc alone)

Students in the proposed CDPs have the option of registering in the summer between years 4 and 5 in order to complete either a 2-month (8-weeks) internship opportunity or academic course following the completion of their undergraduate studies. This optional opportunity is in addition to a mandatory 4-month internship opportunity or academic course, which will be completed in the Summer term following the completion of the course requirements for the MEnvSc. Students who are not in the proposed CDPs have the opportunity to complete only one 4-month internship opportunity or academic course as part of the requirements of the MEnvSc program and degree.

The 2-months of internship/academic experience will allow CDP students to gain valuable experience in the diverse environmental science sector, and will help reinforce their skills through an added internship or a more comprehensive research paper depending on whether the student chooses the research or internship options of the degree program. This will ensure CDP students are better prepared to make informed career decisions, and better placed to compete for permanent jobs.

The 2-month internship/academic courses will function similarly to EES1116Y (Internship) and EES1101Y (Research Paper). In EES 4001H (Internship Training I1) students will complete a mandatory internship, which will be evaluated through reports and/or posters; in EES 4003H (Academic Training 1) students will design, implement and present a research project involving a literature review, and laboratory or fieldwork. These courses link with the degree program through the development of disciplinary knowledge and methods. This means that CDP students will learn to recognize and articulate multiple perspectives between the tasks learned through the internship/academic course and the graduate curriculum early in their graduate experience. As such, the 2-month internship/academic courses support the overall learning outcome in the degree program through providing added opportunities to develop discipline and professional related responsibilities.

The proposed CDPs support the academic goals of the DPES and GDPES as they are described in their most recent academic plans. They also support the academic goals of the Department of Biological Sciences, and are consistent with the overall mission of UTSC and the University of Toronto more broadly, particularly as it pertains to the development of more and better graduate and post-graduate professional programs.

4 Need and Demand

There is a growing awareness in the Departments of Physical and Environmental Sciences (DPES) and Biological Sciences that academic programs in the environmental sciences must respond both to societal need *and* the career aspirations of our students.

Societal Need:

The interdisciplinary and multidisciplinary nature of the environmental sciences is well established throughout Canada – both among academics, and among employers. Real environmental issues are not normally discipline centered, and professionals with skills that cut across disciplines increasingly are in demand. Skilled environmental professionals are impacting the Canadian economy, society and public policy in areas of sustainable development, clean energy, biodiversity conservation, waste management, air and water quality, and environmental impact assessment. Highly trained graduates from environmental science programs like the MEnvSc can ensure that we meet the growing demand for solving environmental problems with a broad interdisciplinary perspective. The unparalleled success of the MEnvSc program provides abundant evidence that there is a great demand for environmental practitioners in Ontario and more broadly in Canada. The market needs skillful professionals who have the expertise to offer solutions to pressing environmental problems while effectively accommodating different socioeconomic priorities.

Student Demand:

Wide and varied provincial and national environmental concerns create a rich research environment for faculty and students and have provided the basis for our undergraduate and graduate programs in the environmental sciences.

There is a growing demand among our undergraduate students for postgraduate studies; in fact, our MEnvSc receives 200-250 applications every year, and approximately 15-20% of those are from students who graduate from various UTSC academic programs. In addition, our students have expressed a desire to further hone their technical and academic skills.

The proposed CDPs will support both of these aspirations. They provide an enhanced undergraduate and graduate experience making them ideal for students looking to build a career in the environmental sciences within the green-sector, geosciences, industry, consulting, government and policy organizations. Increasingly a Master's degree has become a requirement for higher-level careers in the environmental sciences. The proposed CDPs will provide qualified students with the opportunity to tailor their education to meet their career ambitions and to become more

competitive in the job market. CDP students will be allowed to take graduate courses in the final year of their HBS, which will count towards both HBS and MEnvSci programs. Additionally they will have the added opportunity to complete a 2-month internship/academic course which will a level of experience and skills that will be desirable to employers. Students will be able to examine the relationship between learning, experience and their own personal development which can lead to more informed and better prepared environmental science professionals.

Anticipated Yearly Intake:

We anticipate admitting up to 10 students a year into the proposed CDPs. The following is a suggested schedule for the first cohort applying to the program:

- Year 3 HBS students will be able to apply to their chosen CDP as of Fall 2019 (the application deadline will be February 1st, 2020);
- Students will begin Year 4 of their HBS in the Fall of 2020;
- Students will be able to register in the Summer and begin their optional 2-month internship opportunity/academic course in Summer 2021, following the completion of HBS program and degree;
- Students will begin their MEnvSci in Fall 2021;
- Students will begin their mandatory 4-month internship opportunity/academic course in Summer 2022;
- Students will complete the requirements of the MEnvSci in Fall 2022.

5 Program Requirements

Students interested in applying to the proposed Combined Degree Programs must complete the full academic program and degree requirements of their chosen undergraduate program, as well as the full program and degree requirements of the Master of Environmental Science (MEnvSci).

- The academic requirements for the identified undergraduate Specialist programs can be found in the UTSC Academic *Calendar*: (<https://utsc.calendar.utoronto.ca/section/environmental-science>) and (<https://utsc.calendar.utoronto.ca/section/physics-and-astronomy>) and (<https://utsc.calendar.utoronto.ca/section/biological-sciences>)
- The academic requirements for the MEnvSci can be found in the SGS Academic Calendar: <https://sgs.calendar.utoronto.ca/degree/Physical-and-Environmental-Sciences>

Students must normally be full-time and complete a minimum of 5.0 credits over the three sessions of the academic year (Fall, Winter, and Summer) during each year of study; where necessary, exceptions will be made for students in Specialist (Co-operative) programs.

In Year 3 of their undergraduate studies, eligible students who are enrolled in one of the identified undergraduate Specialist programs, and who have a CGPA of 3.3 or higher in Year 2, will apply by the February 1st deadline to the MEnvSc and their chosen Combined Degree Program through the SGS Online Admission Application system. Students must apply to complete the graduate degree full-time and will select one of the three fields of study within the MEnvSc program at the time of application. The three fields of study are: Terrestrial and Aquatic Systems; Conservation and Biodiversity; and Climate Change Impacts and Adaptation. Successful students will be conditionally admitted into the MEnvSc and the Combined Degree Program; Graduate admission at this point, when the student has not yet completed the undergraduate degree program, is conditional. Once students have accepted a conditional offer of admission to the MEnvSc program, they are in the Combined Degree Program.

During Year 4 of undergraduate studies, students in any of the 8 Specialist/Specialist Co-op programs in Environmental Science (Environmental Biology, Environmental Chemistry, Environmental Geoscience, or Environmental Physics), who are accepted into the Combined Degree Program, and conditionally into the MEnvSc, will be required to complete the following undergraduate courses (1.5 FCE) as part of the HBSc degree requirements. Where these courses appear as options in the Specialist program requirements, they may also be counted towards the program completion requirements:

- [EESC24H3](#) Advanced Reading course (can be taken in Year 3 of the HBSc)
- [EESD10Y3](#) Research Project in Environmental Science

During Year 4 of undergraduate studies, students in either of the 2 Specialist programs in Biological Science (Conservation and Biodiversity, or Integrative Biology), who are accepted into the Combined Degree Program, and conditionally into the MEnvSc, will be required to complete the following undergraduate courses (1.0 FCE) as part of the HBSc degree requirements. Where these courses appear as options in the Specialist program requirements, they may also be counted towards the program completion requirements:

- [BIOC63H3](#) Conservation Biology
- [BIOD54H3](#) Applied Conservation Biology

Also in Year 4 of undergraduate studies, students accepted into the Combined Degree Program, and conditionally into the MEnvSc, will be able to take up to 1.0 FCE in graduate courses. The 1.0 FCE in graduate courses will be graded as graduate courses, as per the University Assessment and Grading Practices and Policy, 2012 (section B.4.1.2). The 1.0 FCE in graduate courses will count towards both the HBSc degree and the MEnvSci program and degree.

- For students in the Terrestrial and Aquatic Systems field of study the 1.0 FCE will be selected from the existing MEnvSc courses in consultation with the Graduate Program Supervisor.

- For students in the Conservation and Biodiversity field of study the 1.0 FCE will include:
 - a) EES3002H (0.5 FCE); and
 - b) An elective (0.5 FCE) from the existing MEnvSc courses to be selected in consultation with the Graduate Program Supervisor.
- For students in the Climate Change Impacts and Adaptation field of study the 1.0 FCE will include:
 - a) EES1133H Climate Change Science and Modeling (0.5 FCE); and
 - b) An elective (0.5 FCE) from the existing MEnvSc courses to be selected in consultation with the Graduate Program Supervisor.

Students who successfully complete the undergraduate degree program with appropriate grade standing ([mid-B grade average in the last two years of the HBSc program](#)), and have the degree conferred, will be admitted unconditionally to the MEnvSc, usually this would be in June. In Year 5, these students will continue in their graduate level studies as follows:

- Undertake an optional 2-month internship opportunity or academic course in the Summer term following the completion of their undergraduate studies. Students will be engaged in these activities following the announcement of their unconditional admission in June. Similar to the 4-month internship/academic course, the 2-month internship/academic course links with the degree program through the development of disciplinary knowledge and methods. As such, the 2-month internship/academic course supports the learning outcomes in the degree program by providing added opportunities to learn discipline and professional related responsibilities. The placement and monitoring of the internships will be provided by either individual faculty or the Graduate Department of DPES (GDPEs). Students will be evaluated through research and internship journals/reports and/or poster presentations. CDP students who choose to undertake the 2-month internship /academic course will be required to express their intent to the GDPEs and will receive one-on-one counselling to achieve their goals. An “internship workshop” completed in Year 4 of the CDP program will be required to prepare students for internship. This workshop can be done through the existing Co-op office at UTSC.
- Undertake course work and carry out academic research during Fall and Winter term;
- Complete the mandatory 4-month academic or internship training in the Summer term following the completion of the course requirements for the MEnvSc.
- Students will complete the MEnvSc in 4 continuous academic terms.

5.1 Comparison of Curricular Path

- **The Programs Taken Separately**

		Term	FCE Course Load	Registration in ROSI: FT or PT
Degree 1 (HBSc)	Year 1	F	5.0	FT
		W		
		S		
Specialist/Specialist (Co-operative) Program in Environmental Biology	Year 2	F	5.0	FT
		W		
		S		
Specialist/Specialist (Co-operative) program in Environmental Chemistry	Year 3	F	5.0	FT
		W		
		S		
Specialist/Specialist (Co-operative) program in Environmental Geoscience	Year 4	F	5.0	FT
		W		
		S		
Specialist/Specialist (Co-operative) program in Environmental Physics				
Specialist in Conservation and Biodiversity				
Specialist in Integrative Biology				
Degree 2 MEnvSc	Year 1	F	5.5	FT
		W		
		S		

- **Combined Degree Program**

- **Specialist Program in Environmental Geoscience (example)**

	Term	FCE Course Load		Registration in ROSI: FT and/or PT
		HBSc	MEnvSci	
Year 1	F	5.0	N/a	FT
	W			
	S			

Major Modification Proposal: Combined Degree Programs

Year 2	F	5.0	N/a	FT
	W			
	S			
Year 3	F	5.0	N/a	FT
	W			
	S			
Year 4	F	4.0	0.5 FCE compulsory graduate course (EES3002H for Conservation and Biodiversity field and EES1133H for Climate Change Impacts and Adaptation field),- will count towards both the HBSc and MEnvSc. 0.5 FCE to be selected in consultation with the Program Supervisor for Terrestrial and Aquatic Systems - will count towards both the HBSc and MEnvSc.	FT
	W		0.5 FCE elective graduate course for all fields of study – will count towards both the HBSc and MEnvSc	
Completion of UG program and conferral of UG degree in June.				
	S	0.5	Optional summer registration: EES 4001H (0.5 FCE) - Optional Internship training, 2-months OR EES 4003H (0.5 FCE) - Optional Academic training. This will count towards fulfilling an elective requirement in the MEnvSc Program.	FT
Year 5	F		Coursework 1.0 FCE for internship students and either 1.0 or 1.5 FCE for research option students	FT
	W		Coursework 1.0 FCE for internship students and either 1.0 or 1.5 FCE for research option students	FT
	S		EES 1116Y (2.0 FCE) or EES1101Y (1.5 FCE) - mandatory Academic/Internship – 4 months	FT

6 Admission Process

- In Year 3 of their undergraduate studies, students may apply, by the February 1st deadline, to the MEnvSc and their chosen Combined Degree Program through the SGS Online Admission Application system.
- Eligible students will be notified of their conditional admission to the MEnvSci program in the Winter term of the same year.
- For students to be given full, unconditional admission to the MEnvSc program, they:
 - Must maintain at least a B+ (3.3) average in their final year or over upper level (C- and D-level) courses;
 - Achieve a grade of at least B- (70%) in both of the graduate courses taken in Year 4 of their undergraduate studies (EES3002H and EES1133H and an additional 0.5 FCE for the Conservation and Biodiversity and Climate Change Impacts and Adaptation fields of study, respectively, selected in consultation with the Program Supervisor; and 1.0 FCE for Terrestrial and Aquatic Systems field of study selected in consultation with the Program Supervisor);
 - Successfully complete the requirements of their chosen undergraduate Specialist program and have the HBSc degree conferred.
- If, at the end of Year 4, the student has not met the requirements described above, the offer of conditional admission to the selected Combined Degree Program will be rescinded. Students in this position will be able to complete their HBSc degree as per the requirements of the degree. These students will also be able to apply separately to the Master of Environmental Science outside of the Combined Degree Programs, as long as they meet the minimum admission requirements as outlined in the SGS Calendar; however, the graduate courses completed in Year 4 of the HBSc, if any, will not count towards the MEnvSc degree.
- Students who receive conditional offers of admission and complete the HBSc program and degree requirements in Year 4 may choose to commence the MEnvSc in the Summer term following the completion of the Bachelor's program.

7 Admission Requirements

The proposed Combined Degree Programs do not affect the established admission requirements for the HBSc degrees.

1. Each student in the Combined Program shall meet the respective admission requirements of each program.

2. Students must be enrolled, and in good standing, in one of the following HBSc Degree Programs:
 - Specialist/Specialist (Co-operative) program in Environmental Biology
 - Specialist/Specialist (Co-operative) program in Environmental Chemistry
 - Specialist/Specialist (Co-operative) program in Environmental Geoscience
 - Specialist/Specialist (Co-operative) program in Environmental Physics
 - Specialist program in Conservation and Biodiversity
 - Specialist program in Integrative Biology
3. Students must be full-time, and complete a minimum of 5.0 FCE over the three sessions of the academic year (Fall, Winter, and Summer) during each year of study
4. Students must have a cumulative grade point average (CGPA) of at least B+ (3.3) or better upon completion of Year 2 of their undergraduate studies. Students must maintain a CGPA of at least 3.3 in their final year or over upper level (C- and D-level courses).
5. Meet other qualifications as specified by the MEnvSc program:
 - Applicants are admitted under the General Regulations of the School of Graduate Studies;
 - Provide a written statement explaining their objectives for entering the program, and the suitability of their background. Appropriate post-graduate work experiences will be considered as part of the admission application.
 - CDP students must apply to take the MEnvSc as full-time students

8 Calendar Copy

UTSC Calendar Copy

The following Combined Degree Programs allow exceptional students who are registered in one of the UTSC (HBSc) Specialist programs identified below to apply during their third year, and be considered, for admission to the professional Master of Environmental Science (MEnvSc) program.

These Combined Degree Programs are designed for students interested pursuing a career in environmental sciences within the green-sector, geosciences, industry, consulting, government and policy organizations. They provide a rich intellectual pathway for exceptional undergraduate students in environmental sciences to have early access to graduate level training. Students will be able to begin early planning of their career through academic and/or professional work-based experiential learning that prepares them to tackle emerging environmental challenges.

The Combined Degree Programs allow students to complete both HBSc and MEnvSc degrees in 5 years, and offers them an opportunity to become familiar with research topics and career opportunities through a graduate research course in Year 4 and up to 6-months of academic *and/or* internship training compared to non-CDP students who receive 4-months of training. Students will be able to choose between academic and internship training opportunities, or can combine one research and one internship opportunity. The two academic and/or internship training opportunities will be carried out in the Summer terms following the HBSc and MEnvSci course-work completion.

Combined Degree Programs options are:

- Environmental Biology (Specialist), Honours Bachelor of Science/ Master of Environmental Science
- Environmental Biology (Specialist Co-op), Honours Bachelor of Science/ Master of Environmental Science
- Environmental Chemistry (Specialist), Honours Bachelor of Science/ Master of Environmental Science
- Environmental Chemistry (Specialist Co-op), Honours Bachelor of Science/ Master of Environmental Science
- Environmental Geoscience (Specialist), Honours Bachelor of Science/ Master of Environmental Science
- Environmental Geoscience (Specialist Co-op), Honours Bachelor of Science/ Master of Environmental Science
- Environmental Physics (Specialist), Honours Bachelor of Science/ Master of Environmental Science
- Environmental Physics (Specialist Co-op), Honours Bachelor of Science/ Master of Environmental Science

- Conservation and Biodiversity (Specialist), Honours Bachelor of Science/ Master of Environmental Science
- Integrative Biology (Specialist), Honours Bachelor of Science/ Master of Environmental Science

Admission Process:

- In Year 3 of their undergraduate studies, students may apply to the MEnvSc and their chosen Combined Degree Program, by the February 1st deadline, through the SGS Online Admission Application system.
- Eligible students will be notified of their conditional admission to the MEnvSc program in the Winter term of the same year.
- For students to be given full, unconditional admission to the MEnvSc program, they:
- Must maintain at least a mid-B grade average in the last two years of the HBSc program;
 - Achieve a grade of at least B- (70%) in the graduate courses taken in Year 4 of their undergraduate studies (EES3002H and EES1133H and an additional 0.5 FCE for the Conservation and Biodiversity and Climate Change Impacts and Adaptation fields of study, respectively, selected in consultation with the Program Supervisor; and 1.0 FCE for Terrestrial and Aquatic Systems field of study selected in consultation with the Program Supervisor);
 - Successfully complete the requirements of their chosen undergraduate Specialist program and have the HBSc degree conferred.
- If, at the end of Year 4, the student has not met the requirements described above, the offer of conditional admission to the selected Combined Degree Program will be rescinded. Students in this position will be able to complete their HBSc degree as per the requirements of the degree. These students will also be able to apply separately to the Master of Environmental Science outside of the Combined Degree Programs, as long as they meet the minimum admission requirements as outlined in the SGS Calendar; however, the graduate courses completed in Year 4 of HBSc, if any, will not count towards the MEnvSc degree. In such a case, the graduate unit may exempt the student from the specific course requirement permitting the substitution of another course to meet degree requirements (see [SGS reg 6.2.9](#)).
- Students who receive conditional offers of admission and complete the Bachelor's program and degree requirements in Year 4 will commence the MEnvSc in the Summer term following the completion of the Bachelor's program.

Admission Requirements:

- Each student in the Combined Program shall meet the respective admission requirements of each program.

- Students must be enrolled, and in good standing, in one of the following HBSc Degree Programs:
 - Specialist/Specialist (Co-operative) program in Environmental Biology
 - Specialist/Specialist (Co-operative) program in Environmental Chemistry
 - Specialist/Specialist (Co-operative) program in Environmental Geoscience
 - Specialist/Specialist (Co-operative) program in Environmental Physics
 - Specialist program in Conservation and Biodiversity
 - Specialist program in Integrative Biology
- Students must be full-time, and complete a minimum of 5.0 FCE over the three sessions of the academic year (Fall, Winter, and Summer) during each year of study
- Students must have a cumulative grade point average (CGPA) of at least B+ (3.3) or better upon completion of Year 2 of their undergraduate studies. Students must maintain a CGPA of at least 3.3 in their final year or over upper level (C- and D-level courses).
- Students must meet other qualifications as specified by the MEnvSc program:
- Applicants are admitted under the General Regulations of the School of Graduate Studies;
- Provide a written statement explaining their objectives for entering the program, and the suitability of their background. Appropriate post-graduate work experiences will be considered as part of the admission application.

Program Requirements:

- The full academic program requirements of both programs (BSc/MEnvSc) will be met by students in the Combined Degree Programs.
- Students must be registered as full-time throughout the undergraduate program.
- In Year 4 of their undergraduate studies:
 - Students in any of the 8 Specialist/Specialist Co-op programs in Environmental Science (Environmental Biology, Environmental Chemistry, Environmental Geoscience, or Environmental Physics) must complete:
 - EESC24H3 (0.5 FCE) and
 - EESD10Y3 (1.0 FCE)
 - Students in either of the 2 Specialist programs in Biological Sciences (Conservation and Biodiversity, or Integrative Biology) must complete:
 - [BIOC63H3 Conservation Biology](#)
 - BIOD54H3 Applied Conservation Biology
- In Year 4 of their undergraduate studies:

- Students in the Terrestrial and Aquatic Systems field must complete 1.0 FCE from the existing MEnvSc courses selected in consultation with the Program Supervisor.
 - These courses will be graded as graduate courses. Students must achieve a grade of at least B- (70%).
- Students in the Conservation Biodiversity field must complete 1.0 FCE:
 - EES3002H (0.5 FCE); and
 - An elective (0.5 FCE) from the existing MEnvSc courses to be selected in consultation with the Program Supervisor.
 - These courses will be graded as graduate courses. Students must achieve a grade of at least B- (70%).
- Students in the Climate Change Impacts and Adaptation field must complete 1.0 FCE:
 - EES1133H Climate Change Science and Modeling (0.5 FCE); and
 - An elective (0.5 FCE) from the existing MEnvSc courses to be selected in consultation with the Program Supervisor.
 - These courses will be graded as graduate courses. Students must achieve a grade of at least B- (70%).
- In the Summer term following the completion of the undergraduate program and degree, students have the option for registering in the MEnvSc as full-time students in the Summer to complete EES4001H Internship Training 1 (0.5 FCE) or EES4003H Academic Training 1 (0.5 FCE).
- In the Fall and Winter terms, students must complete 2.0 FCE (or 2.5 if they are completing the research paper option EES1101Y) required for the MEnvSc program.
- In the Summer term following the completion of the MEnvSc coursework requirements, students must complete the 4-month mandatory academic (1.5 FCE) or internship opportunity (2.0 FCE) as part of the requirements of the MEnvSc program .

The path to completion is:

- Year 1: BSc requirements
- Year 2: BSc requirements
- Year 3: BSc requirements
- Year 4: BSc requirements, plus 1.0 FCE in graduate courses
- Optional summer registration following completion of Bachelor's program and degree: optional 0.5 FCE in Academic/Internship training.
- Year 5: MEnvSc remaining requirements, including a 2.0 FCE in Academic/Internship training.

Normal Program Length: 5 years full-time

Time Limit: BSc + 1+ year (4 academic terms: Summer, Fall, Winter, Summer) MEnvSc

- **Contact**

Honours bachelor of Science

Department of Physical and Environmental Sciences

Web: <http://www.utsc.utoronto.ca/physsci/>

Email: akostadinova@utsc.utoronto.ca

Master of Environmental Science

Department of Physical and Environmental Sciences

Web: <http://www.utsc.utoronto.ca/physsci/>

Email: gisela.bento@utoronto.ca

SGS Sample Calendar Copy

The **Combined Degree Program (CDP): UTSC, Honours Bachelor of Science, Specialist in Environmental Biodiversity (HBSc) / Master of Environmental Science (MEnvSci)** is designed for students interested in studying the intersections of environmental sciences with professional experiential preparation in emerging environmental challenges.

Students earn an honours bachelor's degree from the University of Toronto Scarborough (UTSC) as well as a Masters of Environmental Science degree. Distinct advantages include:

- Early application to the MEnvSci program (in Year 3) and conditional admission to the MEnvSci program;
- Address demands from undergraduate students for further training in order to improve their level of competence as environmental practitioners;
- The opportunity to enrol in the MEnvSc in the summer between year 4 and 5 in order to complete either a 2-month academic or internship opportunity in addition to the mandatory 4-month academic or internship opportunity completed by students in the MEnvSci alone

This CDP permits the completion of both degrees in five years with 1.0 credit (full-course equivalent [FCE]) that may be counted towards both the undergraduate and graduate courses.

For a general description of CDPs, see [General Regulations section 1.4.3](#).

Contact

Honours Bachelor of Science Program

University of Toronto Scarborough

Web: <https://utsc.calendar.utoronto.ca/specialist-program-environmental-biology-science>

Email: mdefreitas@utsc.utoronto.ca (Marcelle DeFreitas, Combined Degree Programs Coordinator)

Master of Environmental Science

University of Toronto Scarborough

<https://utsc.utoronto.ca/gradpes/programs-menvsc-0>

gisela.bento@utoronto.ca

UTSC EnvBio (Spe) HBSc/MEnvSci: Application Process

- Applicants must apply to the Honours Bachelor of Science (HBSc) program, the MEnvSci program, and the CDP.
- Qualified students in Year 3 of their HBSc degree program apply to the MEnvSci program for full-time registration; those accepted will receive a conditional offer to start the MEnvSci program upon completion of their HBSc program and degree requirements.
- UTSC EnvBio (Spe) HBSc/MEnvSci: Minimum Admissions Requirements
To be considered for conditional admission to the MEnvSci program and the CDP, applicants must meet the following admission requirements:
- Be admitted to the HBSc degree program and the Environmental Biodiversity specialist program.
- Meet the admission requirements of the School of Graduate Studies and the MEnvSci program.
- Be enrolled full-time and in good standing in the HBSc program:
 - Have a B+ average (cumulative grade point average [CGPA] of 3.3) or higher in Year 2;
 - Carry a full course load of 5.0 full-course equivalents (FCEs) each year (i.e., complete a minimum of 5.0 FCEs over the three academic sessions [Fall, Winter, Summer]).
- Complete the following undergraduate courses (1.5 FCE) as part of the HBSc degree requirements.
 - [EESC24H3](#) Advanced Reading course (can be taken in Year 3 of the HBSc)
 - [EESD10Y3](#) Research Project in Environmental Science

To be given **full, unconditional admission to the MEnvSci program**, applicants must meet the following admission requirements:

- Maintain a B+ average (CGPA of 3.3) or higher in their final year of study in the HSc program or over upper-level (C- and D-level) courses ;
- Achieve at least a grade of at least B- (70%) in both of the graduate courses taken in Year 4 of their undergraduate studies (EES3002H and EES1133H and an additional 0.5 FCE for the Conservation and Biodiversity and Climate Change Impacts and Adaptation fields of study, respectively, selected in consultation with the Program Supervisor; and 1.0 FCE for Terrestrial and Aquatic Systems field of study selected in consultation with the Program Supervisor)
- Be conferred with the HSc degree.

Academic Path to Completion

Every CDP involves a specific combination of approved degree programs. The CDP requirements build on those of the two separate degree programs. Each CDP has a unique pattern of academic activity year by year.

Year	Progression	Specific Requirements*
1 to 3	<ul style="list-style-type: none"> • HSc degree requirements 	<ul style="list-style-type: none"> • The undergraduate degree will include: <ul style="list-style-type: none"> ○ the specialist in Environmental Biology • By the end of Year 3, students will select one of the three fields of study within the MEnvSc program at the time of application. The three fields of study are: Terrestrial and Aquatic Systems; Conservation and Biodiversity; and Climate Change Impacts and Adaptation.
4	<ul style="list-style-type: none"> • By the end of Year 4, fulfill both the undergraduate program requirements and undergraduate degree requirements, including specific undergraduate courses for the CDP. • In Year 4, complete 1.0 full-course equivalent 	Students in any of the 8 Specialist/ Specialist Co-op programs in Environmental Science Students who receive a conditional offer of admission to the CDP must complete: <ul style="list-style-type: none"> • EESC24H3 (0.5 FCE) and • EESD10Y3 (1.0 FCE)

	<p>(FCE) in graduate courses.</p>	<p>Students in either of the 2 Specialist programs in Biological Sciences (Conservation and Biodiversity, or Integrative Biology) must complete:</p> <ul style="list-style-type: none"> • <u>BIOC63H3 Conservation Biology</u> • BIOD54H3 Applied Conservation Biology <p>For the 1.0 FCE in graduate courses completion requirements are:</p> <ul style="list-style-type: none"> • Students in Climate Change Impacts and Adaptation field of study will take: EES1133H (0.5 FCE) and an elective (0.5 FCE) in consultation with the Graduate Program Supervisor. • Students in Conservation and Biodiversity field of study will take: EES3002H (0.5 FCE) and an elective (0.5 FCE) in consultation with the Graduate Program Supervisor • Students in the Terrestrial and Aquatic Systems field of study will select 1.0 FCE in consultation with the Graduate Program Supervisor
<p>Optional registration in the summer Prior to 5</p>	<ul style="list-style-type: none"> • Optional 2-month academic or internship training 	<ul style="list-style-type: none"> • EES4001H Internship Training 1 (0.5 FCE) or EES4003H Academic Training 1 (0.5 FCE).
<p>5</p>	<ul style="list-style-type: none"> • Remaining courses from Year 1 and Year 2 of the MEnvSci program. 	<ul style="list-style-type: none"> • 4.5 FCEs during Year 1 and Year 2 of the MEnvSci program. Consists of 2.0 FCE of coursework and a 4-

		month academic or internship training component of 2.0 FCE.
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9 Consultation

There has been extensive consultation within the Department of Physical and Environmental Sciences, including discussion between the primarily undergraduate and graduate sides of the Department. Consultations with faculty and administrative staff on the merit of the proposed set of Combined Degree Programs, their objectives including benefits to students, and resource implications were conducted on several occasions. Formal and final consultations were conducted on September 29, 2017 at DPES Council, on October 02, 2017 at a DPES Teaching and Curriculum Committee and on August 20, 2018 with DPES Associate Graduate Chair.

There has been extensive consultation (meetings with the GDPES administrators and email correspondence) with the Department of Biological Sciences, as two of their programs are included in this proposal. There has also been consultation within the Department of Biological Sciences at a meeting of the Biology Executive Committee.

The following U of T departments were also consulted on the proposed CDP program: Department of Geography and Programs in Environment (UTM), Department of Earth Sciences, and School of the Environment.

Consultation on the management and implementation of the proposed set of CDPs was conducted on several occasions with the Academic Programs Officer (Ms. Annette Knott); with Vice Dean Undergraduate (Prof. Mark Schmuckler) and Vice Dean Graduate (Prof. Mary Silcox) on July 27, 2017 and October 02, 2017; and with the Assistant Dean (Ms. Lesley Lewis) on October 02, 2017.

*As all of the programs included in this proposal are located at UTSC, an MOU is not required.

10 Resources

The proposed Combined Degree Programs (CDPs) will have minimal impact on the delivery of the identified undergraduate Specialist programs. Students who are

accepted into the CDPs will take Advanced Reading (EESC24H3) and Research courses (EESD10Y3) at UTSC, offered by DPES faculty members.

Students accepted into the CDPs can choose between “Academic” and “Internship” pathways of the MEnvSci program and will be required to take prescribed graduate courses in Year 4 of the HSc (EES3002H and EES1133H and an additional 0.5 FCE for the Conservation and Biodiversity and Climate Change Impacts and Adaptation fields of study, respectively, selected in consultation with the Program Supervisor; and 1.0 FCE for the Terrestrial and Aquatic Systems field of study selected in consultation with the Program Supervisor). The influx of students into the graduate courses will have minimum impact on the course resources since a maximum of 10 students will be admitted to the CDPs each year.

The addition of an optional 2-month academic/internship placement will put some additional demand on the faculty and the internship resources. The MEnvSc Internship coordinators are confident that the existing personnel and resources will be sufficient to support the needs of the anticipated additional 10 students.

11 Governance Process

Levels of Approval Required	Date
Academic Unit Curriculum Committee	<ul style="list-style-type: none"> • DPES Council: September 29, 2017 • DPES Teaching and Curriculum Committee: October 2, 2017; re-approved February 20, 2019 • Biological Sciences DCC: February 14, 2019
<ul style="list-style-type: none"> • Dean’s Office Sign-off • Provost’s Office Sign-off 	February 20, 2019 March 8 2019
Reviewed by Campus Curriculum Committee	March 12, 2019
Approved by UTSC Academic Affairs Committee	
Submitted to Provost’s Office	
Report to AP&P (by P.O.)	
Report to Ontario Quality Council (by P.O.)	