



OFFICE OF THE VICE-PRESIDENT AND PROVOST

TO: Members of the Committee on Academic Policy and Programs

SPONSOR: Carolyn Tuohy
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DATE: January 7, 2003 for meeting of January 15, 2003

AGENDA ITEM: 3

ITEM IDENTIFICATION:

University of Toronto at Scarborough: Calendar Changes 2003-2004

JURISDICTIONAL INFORMATION:

The Committee has authority for approval of major program and curriculum changes

HIGHLIGHTS:

UTSC is proposing 4 new joint programs with Centennial College, (including one co-op alternative), bringing to 7 the number of joint programs between UTSC and Centennial designed to build on complementary areas of strength.

UTSC also proposes 1 new specialist co-op program in Neuroscience and 1 new minor program in French as a Second Language, building upon programs and courses currently offered.

RECOMMENDATION:

It is recommended that the Committee on Academic Policy and Programs recommend to the Academic Board for approval:

The new joint programs with Centennial College, as described in the submission from the University of Toronto at Scarborough, dated December 18, 2002, effective for the academic year 2003-2004.

It is recommended that the Committee on Academic Policy and Programs approve:

The new Specialist (Co-operative) Program in Neuroscience and the new Minor Program in French as a Second Language, as described in the submission from the University of Toronto at Scarborough, dated December 18, 2002, effective for the academic year 2003-2004.



University of Toronto at Scarborough

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December 18, 2002

Professor Carolyn Tuohy
Vice-President, Policy Development and
Associate Provost
University of Toronto
27 King's College Circle, Rm. 206

Dear Professor Tuohy

Proposals from UTSC for new programs and program changes were forwarded to you by Professor Foley, Chair of the Programs and Curriculum Subcommittee. These proposals were duly approved by the Academic Committee at its meetings in November and December, and by the Executive Committee of the UTSC Council at its meeting on December 17. In summary, the new programs are:

- Specialist (Joint) Program in Environmental Science and Technology
- Specialist (Joint) Program in Industrial Microbiology
- Major (Joint, Co-operative) Program in Health Informatics
- Major (Joint) Program in Health Informatics
- Specialist (Co-operative) Program in Neuroscience
- Minor Program in French as a Second Language

I am writing to confirm that the proposed new UTSC programs, and the various program changes, can be supported within UTSC's current resources. The UTSC contribution to the new programs proposed jointly with Centennial College in Industrial Microbiology, Environmental Science and Technology, and Health Informatics will be supported from UTSC's enrolment growth funding. Centennial's contribution will be funded in accordance with the Memorandum of Agreement between the University of Toronto and Centennial College.

Additional costs in the co-op offices relating to the proposed new co-op programs will be recovered through co-op fees paid by students.

These proposals are consistent with UTSC's strategy for achieving enrolment growth and have my full support.

Yours sincerely,

Paul Thompson
Vice-President and Principal

cc. D. McCammond
S. Girard
L. Snowden

UNIVERSITY OF TORONTO AT SCARBOROUGH

2003/2004 New Programs and Program Changes: Executive Summary

UTSC continues to implement its approved plan for enrolment growth, which entails a major increase in the number of students engaged in co-operative studies, and the introduction of a wider range of programs leading to the (four-year) Honours Degree.

NEW JOINT PROGRAMS WITH CENTENNIAL COLLEGE

Continuing discussions with Centennial College have brought to fruition proposals for four new joint programs. UTSC's share of instruction in all four of these proposed joint programs will be funded from UTSC's enrolment growth; Centennial's will be governed by the provisions of the *Memorandum of Understanding* between the University of Toronto and Centennial College.

Two proposed programs, the Specialist (Joint) Program in Environmental Science and Technology and the Specialist (Joint) Program in Industrial Microbiology, are to be offered in collaboration with Centennial's School of Engineering Technology and Applied Science, which is currently housed at the Progress Campus but which will move to the new facility on the UTSC campus in 2004. These programs draw on Centennial's successful Diploma programs in Environmental Technology and in Biotechnology/Industrial Microbiology, both of which currently attract large numbers of university science graduates. Students in the proposed joint programs will combine applied and technological courses taught by Centennial with basic science offerings at UTSC. As in the three joint programs that have already been approved, enrolment will be limited, and application for entry can be made directly from high school or after one year of university study.

The **Specialist (Joint) Program in Environmental Science and Technology** is a new B.Sc. program proposed by the Division of Physical and Environmental Sciences at UTSC, which currently houses Specialist, Major and Minor Programs in Environmental Science offered by 11 full-time faculty members. Centennial's Environmental Technologist Diploma program is a three-year program, but they also offer a "fast track" program which gives university graduates one year advanced standing and makes it possible to earn the Diploma in two years after completing a degree. These fast-track university graduates constitute a majority of the students enrolled in the upper years of the program.

The proposed Joint Specialist Program in Environmental Science and Technology selectively combines 10.5 FCE in sciences that will be taught at UTSC with 5.5 FCE in applied science and technology from Centennial. One additional half credit may be taken from either UTSC or Centennial. The UTSC courses provide theoretical and academic depth in environmental science, while the Centennial ones provide invaluable applied and practical training and experience, which is not emphasized in the current programs at UTSC. Centennial faculty have impressive expertise in environmental protection technology, and will have extensive and excellent state-of-the-art laboratory facilities in their new building; hence, Centennial courses offer a superior exposure to the applied and practical aspects of environmental work. Entry to these Centennial courses is limited to students in the joint program.

The joint program will make it possible to qualify for both a B.Sc. and a Diploma in 8 sessions of full-time study. Students may apply to transfer into the program after one year of university study, or, as of the fall of 2004, for entry directly from high school. Up to 10 students will be admitted into the second year of the program in the fall of 2003, and will take their Centennial classes at the Progress campus until the new facility is ready. It is planned to increase the intake to the program to approximately 20 students as of the fall of 2004 when direct entry from high school will also be available.

The proposal was sent for comment to several related academic units on other campuses and has been reviewed by the tri-campus decanal group for arts and sciences, which has indicated support. A description of the new program and of each of the new courses to be taught by Centennial College is appended.

The **Specialist (Joint) Program in Industrial Microbiology** is a new B.Sc. program proposed by the Division of Life Sciences at UTSC, which currently houses three Specialist, a Major and a Minor Program in biological sciences (including a Specialist Program in Cell and Molecular Biology) supported by 17 full-time faculty members. Centennial's Biotechnology/Industrial Microbiology Diploma program is a three-year program, but they also offer a "fast track" program which gives university graduates one year advanced standing and makes it possible to earn the Diploma in two years after completing a degree. Entry to the fast-track program is highly competitive and university graduates constitute half or more of the students enrolled in the upper years of the program.

The proposed Joint Specialist Program in Industrial Microbiology selectively combines 10.0 FCE in sciences that will be taught at UTSC with 6.5 FCE in applied science and technology from Centennial. The UTSC courses provide theoretical and academic depth, while the Centennial ones provide invaluable applied and practical training and experience. Centennial faculty have impressive expertise in the field, and will have extensive and excellent state-of-the-art laboratory facilities in their new building. Entry to these Centennial courses is limited to students in the joint program.

The joint program will make it possible to qualify for both a B.Sc. and a Diploma in 8 sessions of full-time study. Students may apply to transfer into the program after one year of university study, or, as of the fall of 2004, for entry directly from high school. Up to 10 students will be admitted into the second year of the program in the fall of 2003, and will take their Centennial classes at the Progress campus until the new facility is ready. It is planned to increase the intake to the program to approximately 20 students as of the fall of 2004 when direct entry from high school will also be available.

The proposal was sent for comment to several related academic units on other campuses and has been reviewed by the tri-campus decanal group for arts and sciences, which has indicated support. A description of the new program and of each of the new courses to be taught by Centennial College is appended.

The other proposed new joint programs, the **Major (Joint, Co-operative) Program in Health Informatics**, and the **Major (Joint) Program in Health Informatics** which may be taken in regular study, are proposed by the Division of Social Sciences. The Division currently houses Major and Minor Programs in Health Studies, including a Major (Co-operative) Program in Health Studies. These existing programs involve 5 full-time faculty members in the Division, but are also supported by several disciplines in other academic divisions. This new initiative in Health Informatics is a further outcome of UTSC's earlier collaboration (in Paramedicine) with Centennial's School of Applied Arts and Health Sciences, which is also moving to the new facility on the UTSC campus in 2004.

Health Informatics is a rapidly expanding area: Evidence-based decision-making is dependent upon the collection and analysis of data, and this, in turn, is increasingly dependent upon information technology. The health sector has a growing need for people who are knowledgeable about health data bases and their uses. Neither institution has the resources to offer a program in this area on its own, although Centennial currently offers some courses. By working together they will be able to make a modest beginning with a major program within a four-year Honours degree, intended primarily to be combined with a major in Computer Science or in Health Studies. This program fits well with a strategic interest in health at UTSC, and there are potential partnerships with the Scarborough Hospital and other health institutions, as well as the existing partnership with Centennial.

UTSC will introduce five new half-credit courses, which will require the appointment of a new faculty member to be funded from UTSC's enrolment growth. The program is proposed as a B.Sc. program, and combines 4.5 FCE from UTSC with 2.5 FCE from Centennial (Centennial courses are limited to students in the joint program). Students may apply to either the co-op or the regular versions of the program after completing one year of university study, and direct entry to the co-op program from high school will begin in the fall of 2004. The initial intake will be 5 to 10 students, expected to rise to approximately 25 in subsequent years. Co-op students will complete two four-month work terms. As for all other co-op programs, placement-related administrative costs will be recovered through a co-op fee.

Throughout the development of the proposal, there has been discussion with the Department of Health Policy, Management and Evaluation, which is developing a health informatics stream in an existing graduate program. The Chair of HPME has provided a letter of support for the joint program proposal at the undergraduate level. Descriptions of the programs and of the new courses to be taught by UTSC and Centennial are appended.

OTHER NEW PROGRAMS

The proposed new **Specialist (Co-operative) Program in Neuroscience** is a B.Sc. program that builds on the success of the Specialist and Major Programs in Neuroscience offered by the Division of Life Sciences over the last two decades. These programs are currently supported by 11 faculty members in biology and psychology. Co-op students will complete all of the requirements of the current Specialist program, but will also be required to complete certain additional existing courses, including some from among those offered by the Divisions of Humanities, Social Sciences, or Management. Students will undertake two four-month work terms. As for all other co-op programs, placement-related administrative costs will be recovered through a co-op fee. Students may apply to enter this limited enrolment program after completing one year of university study, and direct entry from high school will begin in the fall of 2004. A description of the proposed program is appended.

The introduction of co-op in Health Informatics and in Neuroscience brings to 37 the number of fields of study in which co-op will be offered by UTSC in 2003-04.

A new **Minor Program in French as a Second Language** is also proposed. This B.A. program will be a useful adjunct for students who are pursuing a wide range of other programs and it is believed that it will fulfill a distinct need. The program can be accomplished with existing resources, and, although a similar program exists on the St. George campus, the duplication is not expected to be problematic. A description of the proposed program is appended.

Both of these new program proposals have been reviewed by the tri-campus decanal group for arts and science.

MINOR PROGRAM CHANGES

Arising from the introduction of a trimestered academic year effective May 2003, UTSC has undertaken a major review of its curriculum. With few exceptions, courses will in future be delivered within a single session. One result is that in many cases full-credit courses that formerly spanned two sessions have been replaced by two (or occasionally one) half-credit courses. Such changes in the delivery of course materials do not necessarily impact programs in a substantive way; where they do not, they are not included in this report. However, in some disciplines, there has been a more substantial revision of the program in connection with the trimestering exercise; all of these more substantial revisions can be accomplished with existing resources and thus are included in this report as minor program proposals.

Proposed minor program changes are summarized below.

Specialist Program in Management (B.B.A.): New Marketing Stream using existing courses.

Joint Specialist Program in Environmental Science and Technology.

This program is offered in collaboration with The School of Engineering Technology and Applied Science at Centennial College. The program may be taken in partial fulfillment of an Honours (Specialist) B.Sc. Degree from UTSC. In addition to completing the requirements for the degree, students will qualify for the Environmental Protection Technologist Diploma from Centennial College.

Program Admission requirements:

Limited enrolment. Applicants must submit a joint program application form and request the programme through ROSI.

Program requirements:

Students must complete 16.5 full credit equivalents (FCE), as follows:

1. Introductory (3.5 FCE):

- | | | |
|----|-----------|---------------------------------------|
| A. | EESA01H3: | Introduction to Environmental Science |
| | EESA06H3: | Introduction to Planet Earth |
| B. | CHMA10H3 | Structure and bonding |
| | CHMA11H3 | Reactions and equilibrium |
| C. | BGYA01H3 | Introductory Biology: Part I |
| | BGYA02H3 | Introductory Biology: Part II |
| D. | [STAB22H3 | Statistics |
| | <i>or</i> | |

2. Fundamentals and Principles (3.5 FCE):

- | | | |
|----|---------------------------|--|
| A. | BGYB50H3 | Ecology |
| | PHYA10H3 | Dynamics of Classical Systems |
| B. | [MATA30H3: | Calculus I (Grade 12) |
| | <i>or</i> | |
| | MATA31H3: | Calculus I (OAC)] |
| | <i>and</i> | |
| | MATA36H3: | Calculus II for Physical Sciences |
| C. | 1.5 FCE of the following: | |
| | EESB02H3 | Principles of Geomorphology |
| | EESB03H3 | Principles of Climatology |
| | EESB04H3 | Principles of Hydrology |
| | EESB05H3 | Principles of Soil Science |
| | EESB09H3 | Biotechnology - Environmental Implications |
| | EESB15H3 | Earth History |

3. Applied and Technical (6.0 FCE):

Courses with the designators STE and IMC will be taught at Centennial College

- | | | |
|----|----------|--|
| A. | STEB21H3 | Organic Chemistry and Applications* |
| | STEB07H3 | Analytical Chemistry and Applications* |
| | IMCB01H3 | Microbiology Basics* |
| | STEB40H3 | Applied Environmental Microbiology* |
| | STEC11H3 | Applied Microbiological Analysis |
| | STEC15H3 | Applied Analytical Instrumentation |

B.	STEB42H3	Water Quality Control*
	STEB43H3	Engineering Equipment and Processes*
	STEC60H3	Applied Hydrology and Spills Management
	STEC61H3	Hazardous Wastes and Modern Industrial Processes
C.	STEB44H3	Environmental Legislation and Regulations*
	<i>and</i>	
	[STEC53H3	Environmental Audits, Sampling and Data Management
	<i>or</i>	
	EESC13H3	Environmental Impact Assessment and Auditing]

4. Advanced (3.5 FCE from among the following):

A.	EESC03H3	Remote Sensing and Geographic Information Systems
	EESC04H3	Biogeography and Biodiversity
	EESC07H3	Groundwater
	EESC18H3	The Great Lakes: A lacustrine system
	EESC31H3	Principles of Glacial Sedimentology and Stratigraphy
	EESD02H3	Contaminant Hydrogeology
	EESD11H3	Process Hydrology
	EESD15H3	Cleaning up our mess: Remediation of Terrestrial and Aquatic Systems

* A minimum grade of 60% is required in courses marked with an asterisk in order to maintain standing in the program.

Academic Rationale:

Currently, a large number of university science graduates go on to enrol in the School of Engineering Technology and Applied Science at Centennial College in programs that provide practical applied knowledge and laboratory skills valued by many potential employers. The Centennial Environmental Technologist Diploma programme is a three-year program, but Centennial also offers a “fast track” program which gives university graduates one year advanced standing and makes it possible to earn the Diploma in two years. These fast-track university graduates constitute a majority of the students enrolled in the upper years of the program.

Centennial direct-entry students who graduate with the Diploma often wish to enhance their solid practical skills by pursuing a B.Sc., with its greater theoretical and scholarly depth. To complete the B.Sc. would normally require 6 additional sessions of full-time study at UTSC, and might take as long as 3 years to achieve.

The proposed Joint Specialist Program in Environmental Science and Technology selectively combines courses that will be taught either at UTSC or at Centennial. The UTSC courses provide theoretical and academic depth in Environmental Science, while the Centennial ones provide invaluable applied and practical training and experience, which is not a strong feature of the current programs at UTSC. Centennial faculty have impressive expertise in environmental protection technology, and will have extensive and excellent state-of-the-art laboratory facilities in their new building very close to the UTSC campus. Centennial courses offer a superior exposure to the applied and practical aspects of environmental work. The joint program will make it possible to qualify for both a B.Sc. and a Diploma in 8 sessions of full-time study.

NEW COURSES (to be taught by Centennial College)

STEB21H3 Organic Chemistry and Applications

An introduction to the theory and practical applications of organic chemistry. An introduction to the principles of structure, properties identification and reactions of organic compounds as related to biology and other areas of science. Enrolment is limited to students enrolled in the Joint Specialist program in Environmental Science and Technology.

Prerequisites: CHMA11H

Exclusions: CHM B40H & CHMB41H. Note: CHM B40H and CHM B41H may be taken after STEB21H, but STEB21H may not be taken after CHM B40H or CHMB41H.

Academic Rationale: This course is an essential element of the Joint Specialist Program in Environmental Science and Technology. The course was selected because of its emphasis on relating the basics to applied problems.

STEB07H3 Analytical Chemistry and Applications

Quantitative analysis with pharmaceutical precision and accuracy to industrial and environmental protocols. Standard wet chemistry and instrumental techniques, data analysis and presentation. Conformity with health, safety and environmental regulatory requirements. Limited to students enrolled in the Joint Specialist Program in Environmental Science and Technology or the Joint Specialist Program in Industrial Microbiology.

Prerequisites: IMCB03H or CHM A11H and permission of instructor

Exclusions: CHMB16H and CHMB11H. Note: CHMB16H or CHMB11H may be taken after STEB07H, but STEB07H cannot be taken after CHMB16H or CHMB11H

Academic Rationale: This course is an essential element of the Joint Specialist Program in Environmental Science and Technology and the Joint Specialist Program in Industrial Microbiology. It was selected because of its emphasis on environmental applications and protocols.

IMCB01H3 Microbiology Basics

Basic principles of microbiology including study of microscopic organisms (bacteria, viruses, protozoans, algae, and fungi), the isolation, cultivation and identification of microbes, host-parasite relationships as they relate to disease, microbial and molecular genetics, growth and control of microbes, and the human immune response to microbes. Limited to students in the Joint Program in Industrial Microbiology or the Joint Program in Environmental Science and Technology.

Prerequisites: BGYA01H and BGYA02H

Exclusions: BGYC17H, MBY377H (MBY355Y)

Academic Rationale : This course is required in the proposed Joint Program in Industrial Microbiology and the proposed Joint Program in Environmental Science and Technology. The basics of microbiology provided by this course will provide the background required for more advanced courses and need to be covered early in the program.

STEB40H3 Applied Environmental Microbiology

The principles of Environmental Biology: water, air and soil testing procedures. Analysis of contaminated and spiked samples using Ministry of Environment and Industry standards, procedures and protocols. Limited to students enrolled in the Joint Specialist program in Environmental Science and Technology

Prerequisites: BGY A11H and IMCB01H

Academic Rationale: This course is an essential element of the Joint Specialist Program in Environmental Science and Technology. It was selected because of its practical and applied emphasis within Ministry and industrial standards.

STEC11H3 Applied Microbiological Analysis

The basic principles of Environmental Microbiology, immunology, molecular biology and genetics and toxicity testing using microorganisms. Laboratories are performed using current Ministry of Environment methodologies. Limited to students enrolled in the Joint Specialist program in Environmental Science and Technology

Prerequisites: STEB40H

Academic Rationale: This course is an essential element of the Joint Specialist Program in Environmental Science and Technology. This course was selected because of its practical and applied emphasis within Ministry of the Environment standards and protocols.

STEC15H3 Applied Analytical Instrumentation

The theory and practices of chemical sampling and analysis used by the Ministry of Environment and Energy. The emphasis will be on the analysis of environmental samples using MOEE procedures and College equipment. Limited to students enrolled in the Joint Specialist program in Environmental Science and Technology

Prerequisites: CHMA11H & STEB07H

Exclusions: CHMC16H Note: STEC15H may not be taken after CHM C16H, but CHMC16H may be taken after STEC15H.

Academic Rationale: This course is an essential element of the Joint Specialist Program in Environmental Science and Technology. It was selected because of its emphasis on Ministry and industrial standards for the analysis of environmental samples, as well as its practical thrust.

STEB42H3 Water Quality Control

The characteristics of raw water and wastewater, water supply systems, sources of supply, methods of treatment, alternative sources of water and methods of distribution. The disposal of wastewater, the collection system and sewage treatment methods. Limited to students enrolled in the Joint Specialist program in Environmental Science and Technology

Academic Rationale: This course is an essential element of the Joint Specialist Program in Environmental Science and Technology. No equivalent course is offered at UTSC

STEB43H3 Engineering Equipment and Processes

Energy and mass in engineering systems, hydrostatics, fluid flow, Bernoulli's theorem. Pumping systems, head losses through hydraulic systems, the efficiency of pumps and motors. Process equipment systems with emphasis on pumps, pipes and valves. Limited to students enrolled in the Joint Specialist program in Environmental Science and Technology

Prerequisites: PHYA10H3

Academic Rationale:

This course is an essential element of the Joint Specialist Program in Environmental Science and Technology. No equivalent course is offered at UTSC.

STEC60H3 Applied Hydrology and Spills Management

The movement of water in its natural state; techniques to measure and control the flow of surface and subsurface water. Current techniques to prevent contamination of subsurface water and surface water by chemical spills. Limited to students enrolled in the Joint Specialist program in Environmental Science and Technology

Prerequisites: EESB04H & STEB42H

Academic Rationale:

This course is an essential element of the Joint Specialist Program in Environmental Science and Technology. It was selected because of its applied nature; no such course is offered at UTSC.

STEC61H3 Hazardous Wastes and Modern Industrial Processes

Each student will be assigned research on a different pollutant, which might be one of the following: heavy metal ions in water, mercury, aromatic solvents, polymeric resins, PCB's, halogenated solvents, organic acids, Freon or pesticides. Limited to students enrolled in the Joint Specialist program in Environmental Science and Technology

Prerequisites: CHM A11H & STEB21H & STEB07H

Academic Rationale:

This course is an essential element of the Joint Specialist Program in Environmental Science and Technology. The course was selected because of its applied nature; no such course is offered at UTSC

STEB44H3 Environmental Legislation and Regulations

The concepts of law and legal process as they apply in Canada. The Ontario Environmental protection Act and other environmental legislation. Research on selected Canadian statutes with a written report and oral presentation. Limited to students enrolled in the Joint Specialist program in Environmental Science and Technology

Exclusions: EESC28H

Academic Rationale:

This course is an essential element of the Joint Specialist Program in Environmental Science and Technology. Although a similar course has been offered at UTSC in the past, it has been done on a stipend basis and is being withdrawn from the curriculum.

STEC53H3 Environmental Audits, Sampling and Data Management

Ministry approved Industrial Auditing protocols. The presentation and manipulation of graphs, spreadsheets and test, using popular software titles. The ISO series, with emphasis on EMS and ISO 14001. Limited to students enrolled in the Joint Specialist program in Environmental Science and Technology

Exclusions: EESC13H3

Academic Rationale

This course is an essential element of the Joint Specialist Program in Environmental Science and Technology. It may be taken by students in the joint program as an alternative to EESC13H as best suits their timetable.

JOINT SPECIALIST PROGRAM IN INDUSTRIAL MICROBIOLOGY

Supervisor: R. Fulthorpe (416-287-7221); fulthorpe@utcs.utoronto.ca

This program is offered in collaboration with the School of Engineering Technology and Applied Science at Centennial College. The program may be taken in partial fulfilment of the requirement of an Honours B.Sc. Degree. In addition to completing the requirements for the degree, students will qualify for a diploma from Centennial College.

Program Admission Requirements

Limited enrolment. Applicants must submit a joint program application form and request the program via ROSI.

Programme Requirements

The program requires the completion of 16.5 full credit equivalents (FCE) as follows.

Courses with the designators IMC and STE are taught at Centennial's campus.

1. 3.5 FCE:

BGYA01H3	Introductory Biology: Part I
BGYA02H3	Introductory Biology: Part II
CHMA10H3	Structure and Bonding
CHMA11H3	Reactions and Equilibrium
[MATA30H3	Calculus I (grade 12)
<i>or</i>	
MATA31H3	Calculus I (OAC)]
MATA35H3	Calculus II for Biological Sciences
[STAB22H3	Statistics
<i>or</i>	
PSCB57H3	Introduction to Scientific Computing]

2. 2.5 FCE:

BGYB10H3	Cell Biology
BGYB11H3	Aspects of Cellular and Genetic Processes
BGYB12H3	Cell Biology Lab
CHMB41H3	Organic Chemistry I
CHMB42H3	Organic Chemistry II

3. 3.0 FCE:

IMCB01H3	Microbiology Basics*
IMCB02H3	Microbial Techniques*
IMCB03H3	Lab Instrumentation*
IMCB04H3	Food Microbiology *
IMCB05H3	Microbiology Project*
STEB07H3	Analytical Chemistry and Applications*

4. 1.5 FCE:

IMCB06H3	Pharmaceutical Microbiology*
IMCB07H3	Food Chemistry*
IMCB08H3	Biochemistry and Applications I*

5. 1.0 FCE from the following list:

BGYB30H3	Animal Physiology
BGYB31H3	Plant Physiology
BGYB50H3	Ecology
EESB09H3	Biotechnology: Environmental Implications
BGYC15H3	Genetics

6. 2.5 FCE:

IMCC01H3	Advanced Microbiology Project
IMCC02H3	Microbial Genetics
IMCC03H3	Biochemistry and Applications II
BGYC65H3	Environmental Toxicology
IMCC04H3	Environmental Microbiology

7. 2.5 FCE from the following list:

BGYC55H3	Microbes in the Environment
BGYD01Y3	Biology Research Project
BGYD21H3	Molecular Biology Laboratory, Hosts, Vectors and Cloning
EESD15H3	Remediation of Soils, Water and Air
BGYC50H3	Foundations of Epidemiology
BGYD23H3	Molecular Biology
ANTB56H3	Health and the Urban Environment

*A minimum grade of 60% is required in courses marked with an asterisk in order to maintain standing in the program.

Academic Rationale:

Currently, a number of university science graduates go on to enrol in the School of Engineering Technology and Applied Science at Centennial College in programs that provide practical knowledge and laboratory skills valued by many potential employers. The Centennial Biotechnology Technologist - Industrial Microbiology Diploma is a three-year program, but Centennial also offers a "fast track" option gives university graduates a year of advanced standing, making it possible to earn the Diploma in two years. Currently, entry to the fast-track program is highly competitive. Fast-track students constitute half or more of the enrolment in courses in the upper years of the program.

Centennial students who graduate with the three-year diploma often wish to enhance their solid practical grounding by pursuing a B.Sc., with its greater theoretical and scholarly depth. To complete the Honours B.Sc. would normally require 6 additional sessions of full-time study at UTSC, and might take as long as 3 years to achieve.

The proposed Joint Specialist Program in Industrial Microbiology selectively combines courses that will be taught either at UTSC or at Centennial. UTSC courses provide theoretical and academic depth and breadth in various areas of biology, while the Centennial ones provide invaluable applied and practical training and experience. Centennial faculty have impressive expertise in biotechnology, and will have excellent state of the art laboratory facilities in their new building adjacent to the UTSC campus, where the School will be housed as of the fall of 2004. By carefully selecting and combining courses from the two institutions, this program will make it possible for students to qualify for both a B.Sc. and a Diploma in the field of industrial microbiology in 8 sessions of full-time study.

NEW COURSES (to be taught by Centennial College)

IMCB01H3 Microbiology Basics

Basic principles of microbiology including study of microscopic organisms (bacteria, viruses, protozoans, algae, and fungi), the isolation, cultivation and identification of microbes, host-parasite relationships as they relate to disease, microbial and molecular genetics, growth and control of microbes, and the human immune response to microbes. Limited to students in the Joint Program in Industrial Microbiology or the Joint Program in Environmental Science and Technology.

Prerequisites: BGYA01H and BGYA02H

Exclusions: BGYC17H, MBY377H (MBY375Y)

Academic Rationale : This course is required in the proposed Joint Program in Industrial Microbiology and the proposed Joint Program in Environmental Science and Technology. The basics of microbiology provided by this course are essential background to higher -level applied microbiology courses, and therefore need to be covered early in the program.

Practical applications of the concepts covered in IMCB01H. Limited to students in the Joint Program in Industrial Microbiology.

Prerequisites: BGYA01H and BGYA02H

Corequisite: IMCB01H3

Exclusion: BGYC17H, MBY376H (MBY375Y)

Academic Rationale: This course is required in the proposed Joint Program in Industrial Microbiology. This is a companion course to IMCB01H.

IMCB03H3 Lab Instrumentation

The use and function of a variety of chemical instruments for the purpose of chemical analysis. Students learn to perform accurate measurements and/or analyses of experimental samples, and acquire proficiency in laboratory procedures of instrumental analysis as applied to QC, government, and industry standards. Limited to students in the Joint Program in Industrial Microbiology.

Prerequisites: CHMA10H and CHMA11H

Academic Rationale: This course is required in the proposed Joint Program in Industrial Microbiology. The methods covered in this course are required in order to proceed to more advanced courses in the program. There is a focus on industrial applications.

An introduction through theory, lab, and field work to microorganisms of importance to the food and dairy industries. Quality control of raw materials and finished products, microbial metabolism, food and drug regulations and guidelines, theory of Good Manufacturing Practice for food manufacturers and Hazard Analysis and Critical Control Point Programs (HACCP). Limited to students in the Joint Program in Industrial Microbiology.

Prerequisite: IMCB01H3

Academic Rationale: This applied course is an essential part of the proposed Joint Program in Industrial Microbiology.

IMCB05H3 Microbiology Project

Practical experience in locating, collecting, and interpreting scientific information for the purpose of designing laboratory procedures. Students work individually under faculty supervision in a lab setting to perform the laboratory procedures and record the results and present a formal report. Limited to students in the Joint Program in Industrial Microbiology.

Prerequisite: IMCB01H & IMCB02H

Academic Rationale: This course is required in the proposed Joint Program in Industrial Microbiology. Projects will be oriented to industrial microbiology. UTSC biology faculty do not have the capacity to meet additional demand for individual supervisions and they generally supervise more basic research.

STEB07H3 Analytical Chemistry and Applications

Quantitative chemical analyses on samples of any sort with pharmaceutical precision and accuracy. Standard wet chemistry and instrumental techniques, and data analysis and presentation. Health, safety, and environmental regulatory requirements. Limited to students in the Joint Program in Environmental Science and Technology and the Joint Program in Industrial Microbiology.

Prerequisite: IMCB03H or CHMA11H and permission of instructor

Exclusions: CHMB16H, CHMB11H. Note: CHMB16H or CHMB11H may be taken after STEB07H, but STEB07H cannot be taken after CHMB16H or CHMB11H

Academic Rationale: This course is required in the proposed Joint Program in Industrial Microbiology and in the proposed Joint Program in Environmental Science and Technology. This course was selected because of its emphasis on environmental applications and protocols.

IMCB06H3 Pharmaceutical Microbiology

Quality control and quality assurance as they apply to the pharmaceutical industry, based on current government regulations. Students acquire knowledge of microbial production and assay methods, enumerate and identify microorganisms from commercial products, and evaluate the antimicrobial effectiveness of disinfectants, preservatives, and antibiotics. Limited to students in the Joint Program in Industrial Microbiology.

Prerequisite: IMCB04H

Academic Rationale: This applied course is an essential part of the proposed Joint Program in Industrial Microbiology.

The principles of food preparation science including HACCP, organoleptic evaluation and survey techniques, tools for the measurement of food, and the physics of food preparation. Food components and their sources, and an introduction to food additives and contamination. Limited to students in the Joint Program in Industrial Microbiology.

Prerequisite: CHMB42H

Academic Rationale: This applied course is an essential part of the proposed Joint Program in Industrial Microbiology.

IMCB08H3 Biochemistry and Applications I

Theory and practical applications of Biochemistry. Theory focusses on the most important molecules found in living systems. Practical applications include the preparation of soap, testing of food oils, identification of sugars, paper chromatography of amino acid, titration of amino acids, and isolation of casein from milks. Limited to students in the Joint Program in Industrial Microbiology.

Prerequisite: CHMB42H

Exclusions: BGYC12H; BCH310H, (BCH320Y), BCH321Y

Academic Rationale: This course is an essential component of the proposed Joint Program in Industrial Microbiology. The course focusses on practical applications of biochemistry while providing some necessary basics. This orientation differentiates it from UTSC biochemistry courses.

IMCC01H3 Advanced Microbiology Project

With individual consultation, guidance, and supervision, select and design a scientific protocol and perform a microbiology experiment, using researched information. A final thesis will be presented and defended orally. Limited to students in the Joint Program in Industrial Microbiology.

Prerequisites: IMCB05H & IMCB06H

Academic Rationale: This course is required in the proposed Joint Program in Industrial Microbiology. Projects will be oriented to industrial microbiology. UTSC faculty do not have the capacity to meet additional demand for individual supervisions and generally supervise projects that are more basic in nature.

IMCC02H3 Microbial Genetics

Basic genetics using microorganisms, with concepts verified through lab experiments. Isolating and identifying nucleic acids, observing gene function, and effecting simple gene transfers. Limited to students in the Joint Program in Industrial Microbiology.

Prerequisite: IMCB06H

Academic Rationale: This course is required in the proposed Joint Program in Industrial Microbiology. The focus is on procaryotes, while BGYC15H, which is an option in the program, emphasizes the genetics of eucaryotes.

IMCC03H Biochemistry and Applications II

Biochemistry and the theory of evolution; evidence for, and condition of, life during ancient times. Products, importance, function, classification, and control of enzymes. Energy balances of glycolysis and aerobic/anaerobic metabolism of carbohydrates and fats. Application of biochemistry to the growth and control of microorganisms and higher living forms. Limited to students in the Joint Program in Industrial Microbiology.

Prerequisites: IMCB08H

Exclusions: BGYC12H; BCH310H, (BCH320Y), BCH321Y

Academic Rationale: This course is required in the proposed Joint Program in Industrial Microbiology. The course is applied in its orientation.

IMCC04H3 Environmental Microbiology

Fundamental microbial ecology studied in theory and applied in lab experiments. Students will characterize, assess and monitor ecosystems. Individual and group activities will include collection and testing of natural and polluted water and soil. Limited to students in the Joint Program in Industrial Microbiology.

Prerequisites: IMCB06H

Academic Rationale:

This course is required in the proposed Joint Program in Industrial Microbiology. It's heavy laboratory content differentiates it from BGYC55H Microbes in the Environment and makes it more suitable as a required course for this program. BGYC55H is a theoretical course and may also be taken as an option in the program.

Major (Joint, Co-operative) Program in Health Informatics

This is a limited enrolment program, which must be completed in conjunction with another Major Program as part of a four-year Honours degree. For information on admissions, fees, work placements, and standing in the program, please see the Calendar section Co-operative Programs General Information, page XXX.

Placements will be in the health and health-related sectors, and may be in public institutions, in research institutions, and in the private sector. There are two placements, each of 4 months. In order to be eligible for the first placement, students must complete at least 9 full credits, including 3.5 full credits from the program requirements. In addition, they must complete the Introduction to Humanities and Social Sciences Co-op Tutorial. In order to qualify for their second placement, students must complete 14 full credits, including at least 2 full credits from among the following: (HLTC10H, HLTC11H, HLTC12H, HLTC13H and HLTC14H).

Program Description

Students must complete 7.0 full credits, in addition to the non-credit Co-op Tutorial requirement, as follows:

For students whose other major program is NOT in Computer Science

CSCA02H	Introduction to Computers
STAB22H	Statistics
HLTB10H	Introduction to Health Informatics
HLTB11H	Introduction to Hardware and Software for Health Informatics
HLTB12H	Project Management for Health
HLTB13H	Health Databases I
HLTB14H	Systems Analysis and Design for Health Informatics I
HLTC10H	Health Informatics and Health Data Management
HLTC11H	Health Informatics and Health Decision Making
HLTC12H	Health Informatics and Health Research
HLTC13H	Health Databases II
HLTC14H	Systems Analysis and Design for Health Informatics II
POLC55H	Introduction to Canadian Health Policy

And one additional half-credit HLT course.

For students whose other major program is in Computer Science

CSCA08H	Introduction to Computer Programming
STAB52H	An Introduction to Probability
HLTB10H	Introduction to Health Informatics
CSCA48H	Introduction to Computer Science
HLTB12H	Project Management for Health
CSCC43H	Introduction to Databases
CSCB07H	Software Design
HLTC10H	Health Informatics and Health Data Management
HLTC11H	Health Informatics and Health Decision Making
HLTC12H	Health Informatics and Health Research
HLTC13H	Health Databases II
HLTC14H	Systems Analysis and Design for Health Informatics II
POLC55H	Introduction to Canadian Health Policy

And one additional half-credit HLT course.

Academic Rationale:

This program complements the existing program in health studies, permitting students to obtain a useful specialization in an area of growing employment demand. The use of information is becoming more and more crucial in areas of society, and the health area in particular. Graduate programs in health informatics are just starting (U of T is beginning a stream within an existing Masters; there is a pooled national PhD program since no single university has enough of the resources), and there is currently one other undergraduate program (at University of Victoria, a co-op program, for which there is enormous demand). Other universities are adding such options to their health studies programs (Waterloo; York). This program fits well with a strategic interest in health at the campus, and there are potential partnerships with the Scarborough Hospital and other health institutions, as well as the existing partnership with Centennial. The proposed program is a modest beginning, and intended primarily to attract double majors with Computer Studies and Health Studies. It is quite possible that it will grow and link with statistics (epidemiology for example), or more specialized applications (biomedical imaging perhaps). There has been discussion with the Department of Health Policy, Management and Evaluation (which is developing a graduate Health Informatics stream in an existing Masters Program), and there is scope for synergy between these programs.

Major (Joint) Program in Health Informatics

Supervisor: T.B.A.

This is a limited-enrolment program which must be completed in conjunctions with another Major Program as part of a four-year Honours Degree. Students must complete the same 7.0 full credit requirements as listed for the Major (Joint, Co-operative) Program. They are not, however, required to take the Co-op Tutorial, nor to complete the work placements.

NEW COURSES

HLTB10H3 Introduction to Health Informatics

Introduces the emerging discipline of health informatics. Examines health informatics from the perspective of the various health disciplines; the role that health informatics plays in various health care organization; roles of informaticians; and trends and issues in health informatics, including social, ethical and human issues.

This course will be taught by Centennial College. Limited to students in the Health Informatics programs.

Prerequisites: CSCA02H/CSCA08H

Academic Rationale: This course serves as the overview to the program in health informatics, and introduces concepts and background information necessary for other courses.

HLTB11H3 Basic Hardware and Software for Health Informatics

Introduction to information and communications technology, including hardware and data input devices, operating systems, software applications, networking models and system outputs. Discusses hardware and software standards and interoperability issues. Examines applications used in the health care industry. Introduction to issues and trends in the Canadian health care industry.

This course will be taught by Centennial College. Limited to students in the Health Informatics Program.

Prerequisites: CSCA02H/CSCA08H
Exclusions: CSCA48H

Academic Rationale: This course is necessary to familiarize students with the hardware and software used in the health care industry, and to understand the trends in the sector.

HLTB12H3 Project Management for Health

Introduces project management concepts, principles, generally accepted practices, processes and standards. Participants will learn about project charters, terms, tools (including software) and the project management life cycle. Through participation in a simulated project participants will acquire hands-on experience of project integration, scope, time, cost, quality, communications, risk and procurement management.

Prerequisites: CSCA02H/CSCA08H

Academic Rationale: A course in project management is extremely useful in Co-op programs such as this. It will also be potentially of interest to students in Health Studies programs

HLTB13H3 Health Databases I

Overview of taxonomies, nomenclature, data structures, databases, including relational databases. Introduction to databases that are developed and retained within health care facilities, and those that are maintained by external agencies.

This course will be taught by Centennial College. Limited to students in the Health Informatics Program.

Prerequisites: CSCA02H/CSCA08H
Exclusions: CSCC43H

Academic Rationale: The database courses are central to a program on health informatics, since this is how health information is stored.

HLTB14H3 Systems Analysis and Design for Health Informatics I

Introduces the systems development life cycle. Covers topics such as analyzing system needs, designing a recommended system, developing and documenting software, system implementation, evaluation and maintenance.

Prerequisites: CSCA02H/CSCA08H
Exclusions: CSCB07H

Academic Rationale: Understanding systems analysis and design is a key component of a program on health informatics. Hence there are two half-credit courses in the program on this topic.

HLTC10H3 Health Informatics and Health Data Management

Introduces the Canadian Council on Health Services Accreditation standards for Information Management, the Canadian Institute for Health Information health services databases, related data

standards including the MIS Guidelines and implications for data collection, reporting, and use of data for internal decision making.

Prerequisites: HLTB10H & HLTB13H/CSCC43H

Academic Rationale: This is one of three courses where students who have been introduced to health databases learn about applications to different areas of health.

HLTC11H3 Health Informatics and Clinical Decision Making

Discusses how clinical decision making is supported through the use of information extracted from health databases, and introduces decision support systems. Through exposure to applications that are typically maintained in health care organizations, students are introduced to issues with respect to data capture, data accuracy and data retrieval to support clinical decision making.

This course will be taught by Centennial College. Limited to students in the Health Informatics Program

Prerequisites: HLTB10H& HLTB13H/CSCC43H

Academic Rationale: This is one of three courses where students who have been introduced to health databases learn about applications to different areas of health.

HLTC12H3 Health Informatics and Health Research

Explores the relationship between health data, information, and knowledge. Develops an enhanced understanding of the role health informatics plays in clinical research methodology and application. Discusses principles of evidence-based practice. Explores use of health databases and internet resources in health research. Covers ethical issues and use of ethics boards.

Prerequisites: HLTB10H & HLTB13H/CSCC43H

Academic Rationale: Provides an essential understanding of the uses of data bases in research and of issues in research methodology and ethics.

HLTC13H3 Health Databases II

Introduces data storage media including data warehousing, data retrieval, data distribution, data mining and effective report writing.

This course will be taught by Centennial College. Limited to students in the Health Informatics Program

Prerequisites: HLTB13H/CSCC43H

Academic Rationale: This is the second of two key courses on databases, and covers essential, more advanced information building on the previous course on the same topic.

HLTC14H3 Systems Analysis and Design for Health Informatics II

Introduces methods and tools for systems analysis including data flow diagrams and data dictionary analysis. Designing effective inputs, outputs, databases and user interfaces will be investigated. The concept of ergonomics and issues around the human/computer interface will be addressed.

Prerequisites: HLTB14H/CSCB07H

Academic Rationale: Understanding systems analysis and design is a key component of a program on health informatics. Hence there are two half-credit courses in the program on this topic, and this second one covers more advanced topics.



HPME

HEALTH POLICY, MANAGEMENT *and* EVALUATION

Department of Health Policy, Management and Evaluation
Faculty of Medicine, University of Toronto
McMurrich Building, 2nd Floor, 12 Queen's Park Crescent West
Toronto, Ontario M5S 1A8 TEL: 416 978-2047 FAX: 416-978-7350
WEB: www.utoronto.ca/hpmc

Office of the Chair

November 20, 2002

Prof. Susan Horton
Chair, Division of Social Sciences
University of Toronto at Scarborough
1265 Military Trail
Scarborough ON M1C 1A4

Dear Sue:

I'm writing this letter to indicate our department's support of the above program. Tina Smith, program Director of our MHS program has been involved in your planning process and has received regular updates and reviewed all the material. She believes the curriculum looks very comprehensive and is based on similar offerings at such universities as Duke, York and University of Victoria. The program is supportive and complementary to both of our teaching programs. Graduates should be highly marketable in the field, and like graduates from the U Vic program, we believe that several will go on to health management careers after they have worked for several years. The co-op nature of the program also means that the students will gain relevant work experience while studying.

On the MSc/PhD side, we also think that there will be a cohort of students who will be well prepared and interested in the MSc/PhD stream in e-health and information management. From a departmental stand point, I think such a program will attract additional faculty resources to U of T helping create a sizable cohort of faculty teaching and doing research in this area, which again will only add to our interests and endeavours in this area.

I wish you much success as you seek approval for the program.

Sincerely,

Louise Lemieux-Charles PhD
Chair
Department of Health Policy, Management
and Evaluation
University of Toronto
416 978-4210

From: "Louise Lemieux-Charles" <l.lemieux.charles@utoronto.ca>
Date: Wed Nov 20, 2002 02:54:26 PM America/Montreal
To: <horton@chass.utoronto.ca>
Cc: <tina.smith@utoronto.ca>, <foley@psych.utoronto.ca>
Subject: Re: Undergraduate Major Program in HI Informatics

Dear Sue:

I'm writing this letter to indicate our department's support of the above program. Tina Smith, program Director of our MHSc program has been involved in your planning process and has received regular updates and reviewed all the material. She believes the curriculum looks very comprehensive and is based on similar offerings at such universities as Duke, York and University of Victoria. The program is supportive and complementary to both of our teaching programs. Graduates should be highly marketable in the field, and like graduates from the U Vic program, we believe that several will go on to health management careers after they have worked for several years. The co-op nature of the program also means that the students will gain relevant work experience while studying. ON the MSc/PhD side, we also think that there will be a cohort of students who will be well prepared and interested in the MSC/PhD stream in e-health and information management. From a departmental stand point, I think such a program will attract additional faculty resources to U of T helping create a sizable cohort of faculty teaching and doing research in this area, which again will only add to our interests and endeavors in this area.

I wish you much success as you seek approval for the program.

Louise Lemieux-Charles PhD
Chair
Department of Health Policy, Management and Evaluation
University of Toronto.

416 978-4210



UNIVERSITY OF
TORONTO
AT SCARBOROUGH

**CENTENNIAL COLLEGE
AND
UNIVERSITY OF TORONTO
MEMORANDUM OF UNDERSTANDING**



**CENTENNIAL
COLLEGE**

October 29, 2002

CENTENNIAL COLLEGE and UNIVERSITY OF TORONTO

MEMORANDUM OF UNDERSTANDING

INTRODUCTION

The purpose of this Memorandum of Understanding between Centennial College and University of Toronto is to establish a framework for the development of joint programs in such areas as are mutually agreed upon.

1. Centennial and University of Toronto shall offer until otherwise agreed joint programs, as approved by the University of Toronto's Academic Policy and Programs Committee and the Board of Governors of Centennial College.
2. Students who successfully complete the requirements of both institutions will receive a bachelors degree granted by the University of Toronto and a diploma or certificate from Centennial College. The name of the degree and the diploma/certificate will be approved by the appropriate bodies of the University of Toronto and Centennial College respectively.

GOVERNANCE

3. For each joint program, two administrative co-leaders will be named, one from Centennial and one from the University of Toronto, who will deal with all administrative issues at the institutional level. Each institution will appoint a senior academic leader to these positions.
4. All relevant present and future statutes, by-laws, regulations and policies of the University of Toronto shall apply to the academic affairs of students within the programs. Also, all students enrolled in these programs shall be governed by legislation passed by the University of Toronto.
5. Students who are studying at a campus of Centennial College will be subject to all of the college's policies governing students.
6. All changes to a program and the addition or deletion of courses, must be agreed by both Centennial and the University of Toronto and approved by the University of Toronto's Academic Policy and Programs Committee and the Board of Governors of Centennial College.
7. The academic administration of each joint program will be conducted in accordance with a protocol agreed to by the two institutions.

REGISTRATION AND STUDENT ASSISTANCE

8. All students will be deemed as University of Toronto students for all record keeping including admission through the Ontario Universities Application Centre (OUAC).
9. Students in joint programs will apply for financial assistance in the same way as other University of Toronto students.
10. Successful applicants to a joint program must meet the admissions requirements of both Centennial College and the University of Toronto.
11. Financial aid income received in terms of gifts or from government funding will be administered by University of Toronto with the total funding received, less administrative costs, allocated to students in the program.

STUDENT AFFAIRS

12. Joint program students will be governed by the University of Toronto's Code of Student Conduct and by the Code of Behaviour on Academic Matters. In addition, when students are on the Centennial campus they will be subject to the Code of Conduct laid out in the Dispute Resolution Policies and Procedures.

HUMAN RESOURCES

13. The conduct of faculty and staff shall be governed by the appropriate statutes, by-laws, regulations, policies and collective agreements, present and future, of the institution that is their employer.
14. The parties agree to develop protocols to govern any circumstances where the faculty of one employer is teaching at the campus of the other employer.

COMMUNICATIONS

15. All formal public statements relating to the joint programs shall be collaborative communiqués, approved for Centennial College by the Dean responsible for the program and for the University of Toronto by the Chair responsible for the program.
16. The parties may establish collaborative communications initiatives such as written publications and a web-site. The costs of these initiatives shall be approved in advance and shall be divided between the parties in proportion to their shares of revenues generated by the programs.

17. Neither party shall use the name of the other institution for promotional purposes without the consent of the other party.

FINANCIAL ARRANGEMENTS

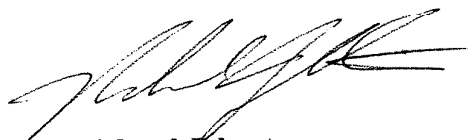
18. The University of Toronto and Centennial College agree to maximize the resources generated by students enrolled in the joint programs in terms of grants and fees, consistent with Government policy of the day. At present, for most programs, the University operating grants formula provides a greater amount of resources per student than the college formula would provide.
19. It is understood that University of Toronto and Centennial are moving forward with the requirement that Government fund the students in these programs at full average funding per student.
20. Given the above, the maximum will be achieved by the University of Toronto collecting academic fees and government grants for the programs. Centennial will receive directly from the University of Toronto the fees and grants received by the University of Toronto derived from Centennial's contribution to teaching credits. Any management costs or similar program-wide costs incurred by the University of Toronto will be deducted from the revenues generated. Such costs will be defined by mutual agreement. A portion of the tuition revenue (at present 30 per cent) will be retained by the University of Toronto for student aid.
21. University of Toronto and Centennial will promote each program to Government at the maximum BIU weight appropriate to the type of program.
22. University of Toronto and Centennial will promote to government the deregulation of tuition fees for joint programs where they reduce the time to completion of both a degree and a diploma/certificate by at least one year, and the college fee is deregulated.
23. The University of Toronto and Centennial will work out the operational issues surrounding ancillary fees based on the principle that joint program students, although attending classes on two campuses, should pay a fair ancillary fee that approximates the ancillary fee of a full-time UTSC student.
24. UTSC will issue the parking pass that will be recognized on both campuses with the fees collected for parking shared in a manner to be mutually agreed.
25. In cases where students have double access, such as students having lockers on both campuses, ancillary fees will reflect the double cost. Ancillary fees will be billed and collected by the University of Toronto. University of Toronto will send Centennial its fair share of the ancillary income as defined by mutual agreement.

26. The University of Toronto will, as applicable, collect materials fees relating to courses that students take through Centennial and transmit them in their entirety to Centennial.
27. Subject to agreement of both institutions, funding can be taken "off-the-top" before the transfer of revenue to fund exceptional opportunities that would not be possible to afford by the single institution alone.

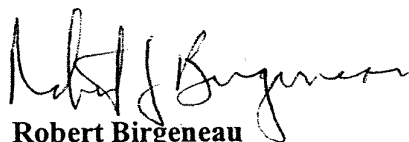
REVIEW AND TERMINATION

28. The parties shall review this agreement at the end of five years. Either party may request a review of the agreement, or of any of the subsidiary agreements and protocols, at any time prior.
29. This agreement may be terminated by providing adequate notice to the other party of an intention to withdraw from the agreement. Adequate notice is defined as eighteen months in advance of the entry of the final first-year cohort into such joint programs as may be in operation at the time.
30. In the event that either or both parties choose to terminate participation in any joint program, notice must be given eighteen months in advance of the entry of the final first-year cohort, and such termination must allow for students already enrolled in the program to fully complete it.

Signed this twenty ninth day of October, 2002 by



Richard Johnston
President
Centennial College



Robert Birgeneau
President
University of Toronto

