

## Memorandum

**To:** Members of the Committee on Academic Policy and Programs  
**From:** Carolyn Tuohy  
**Date:** October 16, 2001

### Item Identification

Faculty of Medicine - Proposal for a revision and re-naming of the BSc (Radiation Science) as BSc (Medical Radiation Sciences)

### Sponsor

Carolyn Tuohy, Vice-President (Policy Development) and Associate Provost

### Jurisdictional Information

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

### Highlights

In the spring of 1998 the University approved a second-entry B.Sc.(Radiation Science) program to be offered jointly with the Michener Institute. The program began in September 1999.

The current proposal is to add a year of specialized course credits to the program, while reducing the admission criteria from a minimum of 10 to a minimum of 5 full university credits. The first year after entry into the program (referred to as "Year 2" in the proposal, reflecting the requirement for one year of university study to be completed prior to admission) will consist of 2 terms, and will include both basic science and discipline-specific courses. The next two years will consist of 3 terms each, involving continuous enrolment throughout the calendar year, and will contain all course content in the current program plus new electives. Overall, this will yield a one-year reduction in the number of calendar years of university study required to complete the program (from a 2+3 model to a 1+3 model). It is believed that this will make the program more attractive to students while maintaining and indeed enhancing its quality. All courses are fully integrated between the two institutions, and a number of faculty are cross-appointed to the two institutions.

The program will be overseen by a Joint Management Committee and a Joint Curriculum Committee. The Faculty of Medicine, University of Toronto, is responsible for ensuring that the program, courses and instructors meet the academic standards of the University of Toronto.

### Action Sought

Approval of the following motion:

That the proposal for a revision and re-naming of the BSc (Radiation Science) program, as the BSc (Medical Radiation Sciences) program, as described in the submission of the Faculty of Medicine dated October 2, 2001, be recommended to the Academic Board for approval, effective September 2002.





FACULTY OF MEDICINE

Inter-faculty & Graduate Affairs  
University of Toronto

Office of the Dean



Professor Carolyn Tuohy  
Deputy Provost  
University of Toronto

October 2, 2001

Dear Carolyn,

Please find enclosed the proposal for revision of the BSc/Diploma in Medical Radiation Sciences. You have requested that we clearly delineate the courses that are under the academic oversight of either the Faculty of Medicine or The Michener Institute. Although we have separated the courses for the purpose of BIU calculation as part of the proposal to be submitted to MTCU, academically this is a fully integrated, joint program. In other words, students must complete all 25 credits to obtain the BSc/Diploma and there is no academic separation from the view of the academic leaders of this program. The Faculty of Medicine views all of the courses provided by The Michener Institute of high academic quality fitting for credit toward a BSc. A number of our faculty members in the Departments of Radiation Oncology and Medical Imaging are cross appointed to The Michener Institute and similarly, faculty from The Michener Institute are cross-appointed to our Departments. This was the academic plan from the initiation of this program approved by Governing Council in 1999. The Academic Director of the program, Professor Pam Catton and I will be available at the Academic Board meeting to address questions from your members.

Thanks very much for the opportunity to present this proposal to Academic Board.

Sincerely,

Catharine Whiteside, MD PhD  
Associate Dean Graduate and Inter-Faculty Affairs  
Faculty of Medicine

xc: Derek McCammond



*Proposal for a revised*

**BSc/Diploma in MEDICAL RADIATION SCIENCES**

*A Joint Program between....*

*The University of Toronto and  
The Michener Institute for Applied Health Sciences*

October, 2001

*for presentation to the ACADEMIC BOARD*



## **BSc/Diploma in MEDICAL RADIATION SCIENCES**

*A Joint Program between The University of Toronto and  
The Michener Institute for Applied Health Sciences*

### **Proposal for a revised BSc/Diploma in Medical Radiation Sciences Program**

The Faculty of Medicine at the University of Toronto and Michener Institute for Applied Health Sciences seek to establish a revised, joint 2nd entry BSc (University of Toronto), and Diploma (The Michener Institute) in Medical Radiation Sciences. This revised program will be a total of 4 years in duration with entrance eligibility of a minimum of one year university (5 full credits with pre-requisites still including physics, mathematics, biology and for Nuclear Medicine OAC chemistry). The courses in this program are fully integrated between the 2 institutions and all credit courses are required to obtain the BSc and Diploma in Medical Radiation Sciences. This change in entrance criteria and duration from the existing 5 year program, will help to enroll students earlier and enable graduation one year earlier than in the current program. Advertisement of this new Medical Radiation Sciences Program will be extended into Ontario High Schools. Cross appointment to The Michener Institute of faculty in the Departments of Radiation Oncology and Medical Imaging, and cross appointment of The Michener Institute faculty to these Departments in the Faculty of Medicine, enable joint contribution to the content of delivery of most courses in this program.

The new BSc/Diploma program will include an added year of specialized course credits (total 25 full credits) compared to the current program<sup>1</sup>. The first year after entry into the new program, or year 2, will consist of 2 terms (Sept - April) and will include both basic medical science and discipline-specific courses. Years 3 and 4 will consist of three terms each (continuous enrollment from Sept to Aug) and contain all the course content in the current program, plus new elective and selective courses providing more in-depth training in the specialist fields. The biomedical science courses in years 2 and 3 will be modified to more directly address the needs of these allied professional students and will be taught by experts in both Basic and Clinical Medical Science Departments in the Faculty of Medicine. The Department of Radiation Oncology will assume academic oversight of ALL new course development in the Faculty of Medicine. The present mandatory research project course in the final year will be replaced by a project course with a written paper and oral presentation. The research project and paper will become a selective in the final year limited to those students who have demonstrated potential for successful engagement in an independent research initiative. New selective courses in specialized fields such as Magnetic Resonance Imaging (MRI), Positron Emission Tomography (PET) scanning methods and advanced radiation therapy techniques will be offered. These course changes reflect an increased flexibility and wider choice within the program and will provide a distinct professional advantage for our graduates. Continuous enrollment in years 3 and 4 will result in earlier graduation and employment compared to the existing program. The Radiation Sciences Program Coordinators at Michener Institute of Applied Health Sciences are working with the Academic Director and

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<sup>1</sup> Current entry requires 2 previous years of university (10 full credits).

Course Directors in the Faculty of Medicine to implement these curriculum changes for enrolment in September 2002. Students who are currently enrolled in the program will be offered the option of completion within the new timeframe.

## **Background**

The current BSc /Diploma program in Radiation Sciences was approved by Governing Council at the University of Toronto and the Board of The Michener Institute in 1998. Initially, this BSc program had two specialization streams, one each for Radiological and Nuclear Medicine Technology. In 1999, a third stream of Radiation Therapy was added and approved by the governance of both institutions.

This combined BSc/Diploma program commenced in September 1999 and provides university level academic education and fulfillment of the professional educational requirements for certification as a Medical Radiation Technologist, a Medical Nuclear Medicine Technologist or Radiation Therapist in Canada. The BSc (Rad.Sci.) from the Faculty of Medicine provides breadth and depth of knowledge and the development of analytical, critical and evaluative skills. Completion of the BSc fulfills the requirements for entry into Graduate School at the University of Toronto and prepares graduates to engage in professional practice at a high level of proficiency. The Diploma from The Michener Institute signifies preparation for professional practice in Medical Radiation Sciences in keeping with the high standard established for allied health professions in Ontario by this institution.

## **Philosophy**

Radiological and Nuclear Medicine Technologists, as well as Radiation Therapists require a strong background in mathematics, physics, biology, physiology, anatomy, pharmacology, pathophysiology, health care administration and human behaviour. These three disciplines share a common core of basic and clinical knowledge and provide a wide scope for scholarship and research related to the integration, application and teaching of Medical Radiation Sciences relevant to human disease.

The Canadian professional certifying bodies for the Radiation Technologies will require a university degree after the year 2004 for Radiological and Nuclear Medicine Technologist training and after the year 2005 for Radiation Therapist preparation. The combined BSc/Diploma program planned in partnership between the University of Toronto and The Michener Institute was the first in Canada to initiate degree status for all three disciplines. It also provides the students with a broad-based theoretical and analytical foundation for their discipline-specific professional responsibilities. This joint program maximizes the synergy between the two



institutions where a cadre of outstanding faculty members have taken leadership in the development and implementation of this unique program.

### **Expected Learning Outcomes and Competencies of Graduates**

The degree/diploma program aims to produce graduates who:

- a) have the knowledge and skills required for the award of a BSc from the Faculty of Medicine at the University of Toronto;
- b) have the knowledge and skills required for the award of a diploma from The Michener Institute;
- c) possess the range and level of knowledge, skills and expertise required for certification with the Canadian Association of Medical Radiation Technologists (CAMRT), the College of Medical Radiation Technologists of Ontario (CMRTO);
- d) can apply their knowledge, skills & judgment to a variety of health care settings and can adapt to a changing health care environment;
- e) have the ability to use their professional knowledge, skills and judgment in the solution of problems and can, through the use of applied research, identify needs and give the appropriate form of professional interaction and care;
- f) can operate effectively within a multi-disciplinary or multi-professional team;
- g) are able to identify and develop a philosophy of health education and promotion which reflects the diversity of attitudes, values and beliefs of our multi-cultural society. Students will have the skills and ability to assess and recognize the differing needs of patients and will be able to respond to these individualized needs; and,
- h) have experienced, in a structured manner, a variety of professional practices and are able to apply and critically evaluate theory in a range of discipline specific professional settings.

### **Eligibility for Graduate Studies**

The format of this second entry program is similar to that currently used for the BSc degree in Occupational Therapy. Graduates who achieve the required academic standing in second entry programs like the proposed Medical Radiation Sciences program are eligible to enter graduate studies at the University of Toronto. Graduates may have the option to pursue advanced degrees in Graduate Units such as: Health Management, Evaluation and Policy, Public Health Sciences (e.g., Epidemiology), OISE/UT (e.g., Health Education). Some Departments may require additional preparatory course work which could be incorporated into selective course options in Year 4 of the new program.

### **Eligibility for Professional Certification**

All graduates will meet the competencies for Certification as a Registered Technologist (Radiography or Nuclear Medicine) or Therapist (Radiation Therapy) and therefore eligible for licensure in the province of Ontario under the College of Medical Radiation Technologists of Ontario.

## **Admission Requirements**

This will be a four year second-entry BSc degree/Diploma program. Students accepted for admission will have the following characteristics. They will have:

- completed a minimum one year (5 credits) of university education with a minimum B-average;
- completed within the 5 course credit at least an introductory full course in physics, a course in mathematics (or statistics for Radiation Therapy only) and a full course in biology;
- the Nuclear Medicine stream also requires completion of OAC chemistry; and,
- demonstrated facility in the use of the English language<sup>2</sup>.

These prerequisites are fulfilled by the core first year courses for Human Biology/ Basic Medical Science specialist programs. With the increased enrolment of undergraduate students in Arts and Science in September 2001, the new Medical Radiation Sciences Program provides a desirable option for completion of a specialist BSc degree and professional training within the usual four year degree period.

## **Student Enrollment**

Since this is a single BSc/Diploma program, sequential changes to the enrollment in each stream are proposed in the first 4 years to enable a transition from the current numbers to a more desirable distribution based on a realistic estimate of job availability in Ontario. The higher enrollment numbers for Radiation Therapy for 2002-05 reflect the continued need to increase the overall number of Radiation Therapists in Ontario in the next 5 years.

<b><u>Year 1 Enrollment</u></b>	<b><u>'02-'03</u></b>	<b><u>'03-'04</u></b>	<b><u>'04-'05</u></b>	<b><u>'05-'06</u></b>
Radiation Therapy	75	65	55	50
Nuclear Medicine	30	35	40	40
Radiological Technology	25	30	35	40
Total	130	130	130	130

***Program total enrolment (all 3 years) = 390***

## **Recruiting and Selecting Students**

The Faculty of Medicine and The Michener Institute are actively engaged in recruitment of students from all universities and High Schools in Ontario. Direct contact with the Science Program Directors, visits to the universities in the Fall and distribution of published information

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<sup>2</sup> Minimum TOEFL score of 580 and TWE of 4.5, plus a successful interview and writing test if necessary

has accelerated significantly since the beginning of the original BSc/Diploma program. Web-site enhancement and interaction with the developers of the University of Toronto Degree Navigator program are underway.

Students are selected on the basis of their previous academic performance. Recruitment will be directed toward students in the Life Sciences at the University of Toronto and other Ontario universities. Students from non-Ontario universities will be eligible to apply for admission. Of note is that the current average age of first enrolment into The Michener Applied Health Sciences' programs is 26 years. Only 20% of students who have enrolled to date in the BSc/Diploma Radiation Sciences program have completed only 2 years of undergraduate university courses. Although the new Medical Radiation Sciences Program may continue to attract students who have more than 2 years of university courses, recruitment strategies must now include High Schools. The Michener Institute is taking the initiative to disseminate information about this program within Ontario High Schools. The Faculty of Medicine will continue to concentrate on advertisement within the University of Toronto and other Ontario universities.

### **Academic Standards and Program Management**

Academic coordination within the Faculty of Medicine and Department of Radiation Oncology will be provided by the Academic Coordinator of the B.Sc. program (Dr. Pam Catton, Department of Radiation Oncology) reporting to the Chair of the Department of Radiation and Oncology and to the Associate Dean Graduate and Inter-Faculty Affairs (Dr. C. Whiteside), Faculty of Medicine, University of Toronto. The Academic Director and Program Coordinator(s) of the Diploma programs report to the Vice-President, Academic, The Michener Institute.

The *Joint Management Committee* is Co-Chaired by the Associate Dean and VP Academic and its members include the Chair of the Department of Radiation Oncology, the Academic Coordinator (Faculty of Medicine), the Administrative Assistant/Business Officer (Faculty of Medicine), the Academic Director and Program Coordinators (The Michener Institute) and the Registrar (The Michener Institute). This Committee has oversight of all the academic, student and administrative affairs of the BSc/Diploma program and meets monthly. The Joint Management Committee plans and implements policies that govern all aspects of the BSc/Diploma program and is responsible for reporting to the Dean of the Faculty of Medicine and to the President of The Michener Institute.

The *Joint Curriculum Committee* is Co-Chaired by the Academic Coordinator (Faculty of Medicine) and the Academic Director (The Michener Institute), with representative members from students in all 3 streams as well as Course Directors and faculty advisors. The Joint Curriculum Committee has oversight of all the course planning, implementation and evaluation.

The Faculty of Medicine, University of Toronto is responsible for ensuring that the program, courses and instructors meet the academic standards of the University of Toronto. A member of

the University of Toronto academic faculty will coordinate directly, or help to coordinate, each course in the curriculum.

The Michener Institute for Applied Health Sciences will be responsible for assuring that the program meets accreditation standards for certification by CAMRT and CMRTO.

### **Faculty**

Teaching faculty are drawn from the Faculty of Medicine and The Michener Institute. Some faculty from The Michener Institute are given appointments at the University of Toronto at the appropriate rank. Similarly, some faculty in the Departments of Radiation Oncology and Medical Imaging are cross-appointed to The Michener Institute. In making these appointments it is recognized that scholarship in Medical Radiation Sciences deals with integration, application and teaching<sup>3</sup>. These attributes of scholarship are applied to the diagnosis and treatment of human disease using medical imaging and therapeutic applications of ionizing radiation.

### **Evaluation of the Program**

The new BSc/Diploma program in Medical Radiation Sciences will undergo an internal review in its third year of operation. The University Academic Coordinator and the Associate Dean Graduate and Inter-Faculty Affairs in collaboration with the VP Academic and Program Directors at The Michener Institute will be responsible for developing an annual evaluation process that will report on the budget and academic standards relative to the stated educational objectives.

### **Registration and Student Affairs**

Students will be registered in The Michener Institute for the diploma, and in the University of Toronto for the BSc(Med Rad.Sci.). The University of Toronto will provide administrative services through the Office of Admissions and Awards. Students will continue to apply through the present OUAC system with oversight by the Medical Radiation Assistant Registrar. Students registered in this program will be eligible to receive full OSAP and UTAPS which will be administered through the Office of Admissions and Awards, the University of Toronto. The Faculty of Medicine will provide registrarial and student support services through the Office of the Registrar and the Office of the Director of Student Support Services. The Michener Institute will provide registrarial and student services through the Office of the Registrar.

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<sup>3</sup> Ernest L. Boyer in *Scholarship Reconsidered: Priorities of the Professorate*. Princeton, Carnegie Foundation 1990

### **Tuition and Fees**

It is proposed that a single tuition be paid to the University of Toronto and that a portion of this tuition be transferred annually to The Michener Institute. The total annual tuition currently paid by students enrolled in the joint program is \$4, 516 and will continue with future increases determined by the University in keeping with usual practice for second entry professional programs. The tuition for Year 2 will reflect the current enrolment of 2 terms. The tuition for Years 3 and 4 will reflect continuous enrolment of 3 terms per year. A memorandum of agreement between the University of Toronto and The Michener Institute will stipulate the amount and timing of this annual transfer payment. Incidental student fees will be paid by students (currently totalling \$816) directly to ~~both~~ institutions.

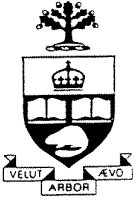
## **Budget**

The Faculty of Medicine seeks the support of the University of Toronto in applying to the Ministry of Training, Colleges and Universities for full BIU funding of this BSc program. The BSc in Radiation Sciences at the University of Toronto was initiated as a self-funding program in the Faculty of Medicine where 50% of the total tuition revenue (approximately \$2,000/student/year) is currently provided for the entire delivery of this program. The new BSc in Medical Radiation Sciences program requires considerably more funding to support new course development and faculty recruitment, as well as the administrative support within the Faculty and University. BIU funding for the courses provided principally by Departments in the Faculty of Medicine, will be sufficient to enable delivery of a top quality academic and professional training program. Without this level of funding, the University of Toronto cannot continue to support the new BSc in Medical Radiation Sciences.

The Michener Institute courses and clinical practica are supported by funding through the Ministry of Health and Long Term Care. ***Continuation of this funding at its current level is absolutely necessary to maintain the quality and amount of teaching in the Radiation Sciences Diploma portion, including clinical teaching, of this joint program.***







# UNIVERSITY OF TORONTO

Office of the Vice-Provost, Planning and Budget

27 King's College Circle, Toronto, Ontario, Canada M5S 1A1 Tel: (416) 978-7116 Fax: (416) 978-1029 E-Mail: d.mccammond@utoronto.ca

## MEMORANDUM

October 22, 2001

To: Planning and Budget Committee

From: Derek McCammond

### Item Identification

Proposal for a revision and re-naming of the BSc (Radiation Sciences) program as the BSc (Medical Radiation Sciences) program.

### Sponsor

Derek McCammond, Vice-Provost, Planning and Budget

### Jurisdictional Information

Excerpt from the terms of reference for the Planning and Budget Committee:

- ii) *"Programs" within a particular degree (for example, specialist, major and minor programs offered by the Faculty of Arts and Science) are primarily handled through the curriculum approval process of the Committee on Academic Policy and Programs. The administration brings the resource aspects of these programs to the Committee for consideration only if they involve allocation of Central University resources, significant shifts in divisional resources and/or significant implications for other divisions, institutions, or the public. Where program changes reviewed by the Committee on Academic Policy and Programs do not require submission to the Planning and Budget Committee, the administration documents the basis on which this decision is made and reports periodically to the Committee.*

### Highlights

The Faculty of Medicine at the University of Toronto and the Michener Institute for Applied Health Sciences seek to establish a revised, joint, 2<sup>nd</sup> entry BSc (University of Toronto) and Diploma (Michener Institute) program. The current joint program was approved as a self-funded program by Governing Council in 1998 and registered its first students in September 1999. There are three specialization streams, Radiological Technology, Nuclear Medicine Technology and Radiation Therapy. The program fulfills the professional educational requirements for certification as a Medical Radiation Technologist, Medical Nuclear Medicine Technologist or Radiation Therapist in Canada.

The revised program will be three years in duration with entrance requirements of a minimum of one year of university education and certain pre-requisite courses (the current program required two years of university education for entrance to the program). A total of 25 course credits will be required for graduation from the new program.

The Committee on Academic Policy and Programs (AP&P) has approved the revised program and the re-naming, a copy of the Executive Summary of the proposal submitted to AP&P is appended.

### **Resource Implications**

Currently, as a self-funded program, the University receives only revenue from tuition fees to resource the program. This has proved insufficient to provide a quality program and the University will submit the revised program to the Ministry of Training, Colleges and Universities for approval as a program eligible for operating grant funding. The operating grant revenue generated will flow to the Enrolment Growth Fund (EGF) and an allocation from the EGF to the Faculty of Medicine will be brought to a future meeting of the Planning and Budget Committee for approval.

### **Action Sought**

Recognizing the need for the Committee to recommend appropriate further allocations from the Enrolment Growth Fund to fund the program,

**YOUR COMMITTEE CONCURS**

with the recommendation of the Committee on Academic Policy and Programs

THAT the proposal for a revision and re-naming of the B.Sc. (Radiation Science) program, as the B.Sc. (Medical Radiation Sciences) program, as described in the submission from the Faculty of Medicine dated October 2, 2001, a copy of which is attached to Report Number 90 as Appendix "A", be approved, effective September 2002.