

# MEDICAL RADIATION SCIENCES

at the

# UNIVERSITY OF TORONTO



Radiation Oncology  
UNIVERSITY OF TORONTO



THE Michener  
INSTITUTE  
of Education at UHN®



## MRS AT A GLANCE

### PROGRAM TYPE

Professional/Undergraduate

### AREAS OF STUDY

MRS applicants may choose one of three distinct streams:

- Nuclear Medicine & Molecular Imaging Technology
- Radiation Therapy
- Radiological Technology

### CREDENTIALS AWARDED

MRS graduates receive two credentials:

- Bachelor of Science in Medical Radiation Sciences (University of Toronto)
- Advanced Diploma in Health Sciences (The Michener Institute of Education at UHN)

### CAMPUSES

MRS students study on two campuses:

- University of Toronto (St. George Campus)
- The Michener Institute of Education at UHN (St. Patrick Campus)

### PROGRAM LENGTH

3 Years/32 months (eight consecutive semesters) of full-time study

### CLINICAL PLACEMENTS

42-48 weeks of clinical experience at partner sites across Ontario

### PROFESSIONAL CERTIFICATION

MRS graduates are eligible to write the national certification exam offered by the Canadian Association of Medical Radiation Technologists (CAMRT)

The Medical Radiation Sciences (MRS) program is your first step towards a rewarding career as a medical radiation technologist (MRT): a caring and compassionate healthcare professional and an essential member of the interprofessional healthcare team.

Working in a dynamic environment with emerging technologies, MRTs are regulated health professionals who use sophisticated radiation equipment to produce diagnostic images of a patient's body or who administer radiation to treat patients for certain medical conditions. As a primary point of contact for patients on their healthcare journey, MRTs are committed to a collaborative patient- and family-centred approach to care. Future career opportunities include (but are not limited to): other specialties such as Magnetic Resonance Imaging (MRI), research activities, management, industry, education and sales/marketing, medical equipment sales, health policy analyst, as well as pursuing higher education opportunities at a Masters level.

## THE MRS PROGRAM

The Medical Radiation Sciences (MRS) program is a second-entry professional undergraduate program jointly developed and administered by The Michener Institute of Education at UHN (Michener) and the Department of Radiation Oncology in the Faculty of Medicine at the University of Toronto. Our special partnership combines the strengths of the two institutions and makes full use of their complementary resources and expertise to offer both a BSc Degree in Medical Radiation Sciences (U of T) and an Advanced Diploma in Health Sciences (Michener).

Our integrated three-year curriculum (offered in an intensive 32 consecutive month format) comprises didactic, simulated and clinical courses. The MRS program provides students with a broadly-based theoretical and analytical foundation along with stream-specific courses and clinical practice activities which reflect their future professional responsibilities. The clinical practicum components of the program, delivered at affiliated clinical sites, integrate and apply the material taught in the didactic curriculum.



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As a Nuclear Medicine Technologist, you will administer radiopharmaceuticals to assess organ function and cellular disease. You will be an integral part of an interdisciplinary diagnostic imaging team, and may be employed in a variety of clinical environments: community or teaching hospitals, private clinics, research institutes and public health institutions.

## NUCLEAR MEDICINE & MOLECULAR IMAGING TECHNOLOGY (NMMIT)

Nuclear Medicine is an imaging method used to safely detect disease in its earliest stages.

Nuclear Medicine involves the use of radioactive tracers administered by injection, orally, or inhalation. Special cameras, such as gamma cameras, SPECT/CT or Positron Emission Tomography (PET) and radioactive tracers are used to image how disease or treatments alter organ system function, such as the amount of urine the kidneys produce per minute or the extent of damage to the heart muscle due to a heart attack.

### WHAT DOES A NUCLEAR MEDICINE TECHNOLOGIST DO?

- Prepares and administers radiopharmaceuticals to patients
- Interacts closely with patients, physicians and other members of the healthcare team to obtain the best diagnostic information possible
- Acquires and analyzes diagnostic images using the latest in gamma camera, Positron Emission Tomography (PET) and hybrid technologies

### WHY STUDY WITH US?

As the only program in Ontario, the Nuclear Medicine & Molecular Imaging Technology curriculum introduces a hybrid learning experience to meet the needs of different learners by allowing students to participate in both online and face-to-face components. Theory is put into practice by examining increasingly complex case studies and applying knowledge in both simulated and clinical environments. Students will work both independently and in teams to develop problem solving and clinical reasoning skills to support application to clinical practice.

### GAIN EXPERIENCE CLINICAL PLACEMENTS

MRS Students gain experience through non-paid clinical placements at one or more sites across Ontario. NMMIT students graduate with 48 weeks of clinical experience:

- 6 week-long rotations in Year 2
- 12 weeks at the end of Year 2
- 30 weeks in Year 3



As a Radiation Therapist, you will work within an interprofessional oncology team consisting of physicians, medical physicists, nurses and other healthcare providers in cancer centres. Radiation Therapists can take on different roles in several areas within a cancer centre: simulation utilizing computed tomography (CT), treatment planning/dosimetry and front-line treatment delivery.

## RADIATION THERAPY

Radiation Therapy is the planning and application of ionizing radiation to destroy tumours in patients with cancer.

Radiation therapy is commonly delivered to a patient using large sophisticated machines called linear accelerators (external beam radiation therapy) or by use of radioactive sources that are placed internally within or on the surface of a patient (brachytherapy). Radiation therapy is one of three main modalities used to treat cancer – it may be used alone or in conjunction with surgery and/or systemic therapy. For many patients with cancer, radiation therapy will play a very important role in their overall treatment.

### WHAT DOES A RADIATION THERAPIST DO?

- Accurately positions patients for cancer treatment, performs imaging procedures for verification and delivers ionizing radiation to treat patients using advanced radiation therapy equipment
- Performs dosimetry planning (e.g. physics and dose calculations) using specialized computer software to optimize a patient's radiation treatment plan
- Monitors, educates and counsels patients on possible side effects from treatment, often developing a supportive relationship with patients as they come in for daily treatment over a period of several weeks

### WHY STUDY WITH US?

You will benefit from lectures delivered by expert faculty from the University of Toronto's Department of Radiation Oncology who are actively involved in advancing clinical practice and world-class research. In addition, our longitudinal and integrated Interprofessional Education curriculum will provide essential learning opportunities to practice communication, critical thinking, and conflict management with students from other healthcare disciplines; essential skills for collaborating in the interprofessional team.

### GAIN EXPERIENCE CLINICAL PLACEMENTS

MRS Students gain experience through non-paid clinical placements at one or more sites across Ontario representing a variety of cancer services and programs. Radiation Therapy students graduate with 42 weeks of clinical experience:

- 8 weeks at the end of Year 1
- 4 weeks at the end of Year 2
- 30 weeks in Year 3





As a Radiological Technologist, you may specialize in a particular area of diagnostic imaging, and be employed in a variety of clinical environments: community or teaching hospitals, private clinics, research institutes and public health institutions.

## RADIOLOGICAL TECHNOLOGY

Radiological Technology uses medical imaging equipment and advanced computer systems to produce and enhance radiographic (x-ray) images.

Radiological Technology specializes in the complex imaging of normal and abnormal human anatomy in multiple planes for the diagnosis and treatment of pathology. A variety of imaging technologies are used to produce these complex images such as general radiography, fluoroscopy, interventional radiology, computed tomography (CT), angiography, mammography and more.

### WHAT DOES A RADIOLOGICAL TECHNOLOGIST DO?

- Plays an integral role in detecting injury and disease by performing diagnostic imaging examinations, including mammography and computerized tomography
- Accurately positions patients and ensures that a quality diagnostic image is produced, by applying knowledge of anatomy, physiology and mathematics
- Assesses the needs and capabilities of patients while working in a fast-paced environment

### WHY STUDY WITH US?

Hands-on learning combined with small class sizes allows for personalized learning and a sense of community between fellow classmates and the professors. Access to dedicated clinical simulation equipment, including a functioning computer tomography (CT) unit, and innovative curriculum prepares students in a safe learning environment for the dynamic healthcare setting. These measures ensure our students succeed in their studies and transition into the clinical setting.

### GAIN EXPERIENCE CLINICAL PLACEMENTS

MRS Students gain experience through non-paid clinical placements at one or more sites primarily within the Greater Toronto Area. Radiological Technology students graduate with 42 weeks of clinical experience:

- 8 weeks at the end of Year 1
- 4 weeks at the end of Year 2
- 30 weeks in Year 3



## THE MRS ADVANTAGE

The MRS program continues to evolve and innovate in response to healthcare system needs. We support the development of fundamental health professional skills while seamlessly integrating opportunities to personalize the curriculum.

### EXPLORE COMPLEMENTARY FIELDS

MRS offers a unique and carefully sequenced curriculum to ensure that you will have the core skills necessary to thrive in your career as an MRT. The program also includes Selectives (specialized electives) which are courses developed with the purpose of providing knowledge and expertise in specialized fields of practice – many of which can be used towards additional certification in complementary fields after graduation. Selective courses are updated regularly to reflect the evolving practice of the MRT and currently include: Physics of MRI, MRI Anatomy and Pathology, Informatics, Introduction to Brachytherapy, Patient Education, Supportive and Palliative Care, Mammography and many more.

### A FOCUS ON PATIENT CARE

The MRS technology landscape is rapidly evolving. However, the principal focus of MRT practice continues to be the patient. Newly redesigned patient care courses in the first year of the program lay the foundational knowledge and skills necessary to be a successful healthcare provider, preparing students for the immersion into the clinical environment. Increased emphasis on patient- and family-centered care including health literacy, reflective practice, and understanding professional roles and responsibilities anchor these patient care courses.

### INTERPROFESSIONAL EDUCATION

MRS offers a two semester longitudinal course on Experiential Learning in Interprofessional Education and Collaboration. A balance of seminars, lectures, and experiential activities that leverage the University of Toronto's Interprofessional Education (IPE) curriculum will introduce MRS students to learning from, with, and about other health profession students. MRS students gain an appreciation for healthcare team dynamics and communication skills to help prepare them to be collaborative practice-ready healthcare professionals. Courses common to all three MRS streams provide collaborative opportunities for students to learn from, with and about each other's roles.

### RESEARCH CULTURE

A research philosophy is embedded throughout the MRS program. Workshops such as Efficient and Effective Research Skills establishes the fundamental knowledge and skills for all students, right from the start. Dedicated foundational courses in research such as Introduction to Research Methods, followed by Research in Practice and Research Methods elevates the research culture further. Focused on enhancing practical research skills, MRS graduates are recognized as health professionals who value evidence-based practice, contribute to knowledge translation, and are able to critically appraise and convey ideas meaningfully.



## UNIVERSITY OF TORONTO

The University of Toronto is the largest, and one of the most prestigious, universities in Canada with approximately 700 undergraduate programs and 280 Master's and Doctoral level graduate programs. With academic and research strengths ranked among the world's best, and over 90,000 students on three campuses, U of T offers unmatched services, facilities and experiences for students.

[www.utoronto.ca](http://www.utoronto.ca)

## THE MICHENER INSTITUTE OF EDUCATION AT UHN

For 60 years, The Michener Institute of Education at UHN has been a leading provider of education in applied health sciences. Michener's recent integration with UHN, the first partnership of its kind in Canada, means that students' education is informed by the most current clinical practice. Michener is home to more than 800 students pursuing graduate certificates or advanced diplomas and 3,330 in continuing education courses each year. Michener is proud to be affiliated with over 100 clinical sites.

[www.michener.ca](http://www.michener.ca)

As an MRS student, you'll be part of two campus communities: the smaller healthcare-focused community at Michener as well as the larger U of T community which offers an impressive range of academic and social opportunities. Less than 500 meters apart, the campuses are located in the heart of Toronto's Discovery District - home to leading healthcare facilities and research institutions.

At U of T you will have access to confidential help and specialized support provided by U of T's Office of Health Professions Student Affairs (Faculty of Medicine) as well as academic resources across U of T's 44 libraries and opportunities facilitated by the Division of Student Life – including over 1000 student clubs! You will also have access to Michener's specialized Learning Resource Centre (LRC) and Student Success Network (SSN) which provides a full range of services including coaching and counselling, peer tutoring, health services and housing information.

### U of T Office of Health Professions Student Affairs

<http://www.md.utoronto.ca/OHPSA>

### Michener Student Success Network

<https://michener.ca/students/student-success-network/>

### Residence & Housing Information:

<http://www.studentlife.utoronto.ca/hs>  
<https://michener.ca/students/residence/>



"I love the hands-on learning experience in labs with the same machines we will see and use in clinic, and the opportunity to learn in clinic for over nine months"

—Samantha Bulger

MRS Class of 2019  
(Radiation Therapy)  
[uoft.me/samanthabulger](http://uoft.me/samanthabulger)

Meet more of our students at

[www.radonc.utoronto.ca/meet-our-community](http://www.radonc.utoronto.ca/meet-our-community)



## ADMISSIONS

MRS is a second-entry program designed for students with at least one year of university experience including courses in Biology, Math, Physics and Social Science. In addition to satisfying academic requirements, academically competitive applicants must participate in an admissions interview and submit proof of English proficiency (if applicable).

### ACADEMIC REQUIREMENTS

To be eligible for admission to the MRS Program, applicants must present:

1. A minimum of one year (5.0 credits) of university education, with successful completion of one single-semester (0.5 credit) course in each of the following prerequisite subjects:
  - Biology
  - Mathematics
  - Physics
  - a Social Science
2. A minimum cumulative Grade Point Average (cGPA) of B-
3. Grade 12 U-level Chemistry or equivalent (Nuclear Medicine & Molecular Imaging Technology applicants only)

**NOTE:** Admission is competitive and satisfying these requirements does not guarantee admission. Please consult with the MRS Admissions Office to confirm that prerequisite subject courses are appropriate for admission purposes.

### ADMISSIONS INTERVIEWS

Academically competitive applicants will be invited to participate in an Admissions Interview. The interview process is designed to assess non-academic qualities and abilities which cannot be ascertained from an academic record. Factual knowledge in any subject will not be tested. Instead, the ability to comprehend, reason and communicate is assessed. Interviews are conducted on-campus at the end of April and/or the beginning of May.

### ENGLISH LANGUAGE REQUIREMENT

Applicants for whom English is a second language may be required to provide proof of an English language assessment. Visit [www.medicalradiationsciences.ca](http://www.medicalradiationsciences.ca) for more information.

**NOTE:** The Admissions information provided above reflects requirements for applicants seeking Fall 2019 admission. Please refer [www.medicalradiationsciences.ca](http://www.medicalradiationsciences.ca) to confirm requirements for future admission cycles.

## IMPORTANT DATES

### OCTOBER

Applications open for Fall Admission (Apply online at [www.ouac.on.ca](http://www.ouac.on.ca))

### FEBRUARY 1

Deadline to apply for Fall Admission

### FEBRUARY 15

Deadline to submit final or in-progress academic transcripts, MRS Applicant Checklist and proof of English language proficiency (if required)

### APRIL 30

Recommended deadline to submit final academic transcripts for Winter term courses

(If a conditional offer of admission is issued, the final deadline to satisfy the conditions will be July 15)

### LATE APRIL / EARLY MAY

Admissions interviews

### MID MAY

Admissions decisions issued

### LEARN MORE

For more information about the MRS program, admission requirements and application procedures as well as answers to frequently asked questions, please visit our website at [www.medicalradiationsciences.ca](http://www.medicalradiationsciences.ca) or contact us at [mrs.admissions@utoronto.ca](mailto:mrs.admissions@utoronto.ca).

Michener and U of T representatives participate in education fairs and campus visits across Ontario. For information and updates about upcoming events, visit: [www.radonc.utoronto.ca/informational-events](http://www.radonc.utoronto.ca/informational-events)



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**CONNECT WITH US:**

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**UME PROGRAMS:**

**Medical Radiation Sciences Program**

[www.medicalradiationsciences.ca](http://www.medicalradiationsciences.ca)  
[mrs.admissions@utoronto.ca](mailto:mrs.admissions@utoronto.ca)  
[facebook.com/medicalradiationsciences](https://facebook.com/medicalradiationsciences)

**MD Program**

[www.md.utoronto.ca/admissions](http://www.md.utoronto.ca/admissions)  
[medicine.admiss@utoronto.ca](mailto:medicine.admiss@utoronto.ca)  
[facebook.com/UTMedAdmissions](https://facebook.com/UTMedAdmissions)

**Physician Assistant Program**

[www.paconsortium.ca](http://www.paconsortium.ca)  
[admissions.pa@utoronto.ca](mailto:admissions.pa@utoronto.ca)  
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