

Area of Interest: Health Sciences

Diagnostic Medical Sonography

Ontario College Graduate Certificate

Program Code: 1618X01FWO

2 Years

Ottawa Campus

Our Program

Further your career in diagnostic sonography, exploring theory and clinical practise.

The two-year Diagnostic Medical Sonography Ontario College Graduate Certificate program provides you with the crucial knowledge and technical skills to produce sonographic images and carry out diagnostic procedures.

Diagnostic medical sonography is a diverse and dynamic field of work. Sonographers must be able to work well in stressful situations and think critically. The quality of an ultrasound study is dependent on the skills of the sonographer.

Through theory, simulation, lab practice and many extensive clinical experiences, you learn to produce quality sonographic images. You consider health and safety in your work and apply quality assurance for the safe and proper use of ultrasound.

You have two 600-hour field placements where you enhance your technical, professional, interpersonal and patient management skills. These acquired skills help you to function as a member of a healthcare team.

This program offers you the hands-on skills you need for success. Algonquin College's Diagnostic Medical Sonography program is accredited by the Accreditation Canada EQual, and graduates from accredited programs are eligible to write the national certification through Sonography Canada.

Upon successful completion of the national certification exam, you hold the title of Canadian Generalist Sonographer. Graduates must register with the College of Medical Radiation and Imaging Technologists of Ontario (CMRITO) to be eligible for employment in Ontario. You may find employment as a:

- diagnostic medical sonographer
- sonography educator
- medical technical salesperson
- application specialist
- medical researcher
- manager or supervisor in related fields

SUCCESS FACTORS

This program is well-suited for students who:

- Possess excellent communication and interpersonal skills.
- Can be self-directed in a team environment.
- Demonstrate proficiency with technology.
- Possess excellent hand-eye coordination.

- Are detail-oriented and conscientious.
- Have strong analytical and perceptual skills.
- Are able to work effectively in challenging and stressful situations.
- Possess the ability to think critically and to self-reflect.

Employment

Graduates may find employment as diagnostic medical sonographers, sonography educators, medical technical salespeople, application specialists and medical researchers, as well as managers or supervisors in related fields. Upon successful completion of the program, to become credentialed a student must write the Sonography Canada certification exam.

Diagnostic Medical Sonography is a regulated profession under the Health Regulated Professions Act in Ontario. Graduates must register with the College of Medical Radiation and Imaging Technologists of Ontario (CMRITO) to be eligible for employment.

Learning Outcomes

The graduate has reliably demonstrated the ability to:

- Produce and assess a variety of high-quality diagnostic images by applying knowledge of anatomical structures, pathology and current technologies.
- Differentiate the sonographic appearance of normal structures from anomalous and pathologic conditions and formulate a detailed technical impression for the reporting physician.
- Complete all work in adherence to professional practice within the scope of the Canadian diagnostic medical sonographer and in accordance with the Sonography Canada National Competency Profile regulatory standards.
- Interpret requests and adapt procedures relative to the patient and the diagnostic image requirements in routine and complex clinical cases.
- Provide quality care to patients in assessment and diagnostic ultrasound imaging while incorporating patient advocacy and education to patients, their family, health care team members and the public.
- Assess patients` status at all times and respond to emergency situations where indicated.
- Practice safe operating, calibrating, setting up, troubleshooting and evaluating of a variety of complex equipment in consideration of quality assurance principles.
- Analyze a broad range of diagnostic imaging procedures to assist physicians in the diagnosis and management of multiple system disorders.
- Collaborate with members of the interdisciplinary team in the provision of comprehensive patient care.
- Develop strategies for ongoing personal professional development to support lifelong learning.
- Identify and apply discipline-specific practices that contribute to the local and global community through social responsibility, economic commitment and environmental stewardship.

Program of Study

Level: 01	Courses	Hours
IMG1001	Cross-Sectional Imaging for Sonography	28.0
IMG1002	Sonography Physics and Instrumentation I	42.0
IMG1004	Obstetrical and Gynecological Sonography I	56.0
IMG1016	Sonography of Superficial Structures	28.0
IMG1017	Sonography Skills Laboratory I	126.0
IMG1034	Abdominal Sonography	42.0
IMG1035	Professional Practice and Legislation for Medical Imaging Professionals	28.0
IMG1043	Practice Foundations for Sonography I	14.0
Level: 02	Courses	Hours
IMG1007	Sonography Physics and Instrumentation II	42.0
IMG1008	Sonographic Pathology of the Abdomen	56.0
IMG1018	Sonography Skills Laboratory II	126.0
IMG1036	Obstetrical and Gynecological Sonography II	56.0
IMG1037	Vascular Sonography	28.0
IMG1038	Patient Management for Medical Imaging Professionals	14.0
IMG1039	Patient Management Skills for Medical Imaging Professionals	14.0
IMG1044	Practice Foundations for Sonography II	14.0
IMG1047	Sonography Skills Lab III	14.0
IMG1048	Sonography Critical Case Review	14.0
Level: 03	Courses	Hours
IMG1013	Clinical Practicum I	600.0
Level: 04	Courses	Hours
IMG1014	Clinical Practicum II	600.0

Fees for the 2023/2024 Academic Year

Tuition and related ancillary fees for this program can be viewed by using the Tuition and Fees Estimator tool at <https://www.algonquincollege.com/fee-estimator>.

Further information on fees can be found by visiting the Registrar's Office website at <https://www.algonquincollege.com/ro>.

Fees are subject to change.

Additional program related expenses include:

- Books and supplies cost approximately \$2,700 and can be purchased from the campus store. For more information visit <https://www.algonquincollege.com/coursematerials>.

- Prior to placement, Clinical Practicums require training in Health and Safety, WHMIS, OWSHA training and approved Non-Violent Crisis Intervention (NVCi) training placements. There are some additional costs associated with training that should be anticipated by students which are not covered by tuition fees.
- The uniform required for clinical site activities costs approximately \$150.
- This program has online learning components requiring students to have a personal computer with Internet connectivity.
- Please note that parking, travel and accommodations for all clinic activities are the responsibility of the students.

Admission Requirements for the 2024/2025 Academic Year

Program Eligibility

- Diploma, Advanced Diploma, Graduate Certificate or Degree in Medical or Health related field with a minimum of 2 courses (or equivalent) in Human/Gross Anatomy and Human Physiology, plus 1 course in Human Pathology and 3 additional human health related courses. All courses must have a minimum grade of 70% (B-) or higher.
- Examples of degrees included but not limited to: BSc Kinesiology, BA Kinesiology, BSc Nursing, Bachelor of Medical Radiation Sciences, Bachelor of Applied Health Sciences, MSc OT, MSc PT.
- Examples of Diplomas and Advanced Diplomas include, but not limited to: Medical Radiation Technology, Respiratory Therapy, Registered Practical Nursing, Cardiovascular Technology, Registered Massage Therapy, Occupational Therapy Assistant, Physiotherapy Assistant.
- All applicants must complete an assessment of their knowledge and skills through the Test Centre, and pay an exam fee. Results from the Algonquin College Health Program Admissions Test (AC-HPAT) will be utilized to establish minimum eligibility and applicant ranking. The AC-HPAT can only be written once per academic cycle. For further information on the HPAT and how to book your assessment, please visit Algonquin's Test Centre.
- Applicants with international transcripts must provide proof of the subject-specific requirements noted above and may be required to provide proof of language proficiency. Domestic applicants with international transcripts must be evaluated through the International Credential Assessment Service of Canada (ICAS) or World Education Services (WES).
- IELTS-International English Language Testing Service (Academic) Overall band of 6.5 with a minimum of 6.0 in each band; OR TOEFL-Internet-based (iBT)-overall 88, with a minimum in each component: Reading 22; Listening 22; Speaking 22; Writing 22; OR Duolingo English Test (DET) Overall 120, minimum of 120 in Literacy and no score below 105.

ACCEPTED APPLICANTS MUST:

Police Records Check Documentation:

Applicants must note important information listed below regarding Police Record Check program requirements.

It is your responsibility to obtain the Police Records Check For Service With Vulnerable Sector (PRCSVS) from your local Police Department prior to the deadline identified by your program and to pay any associated costs. It may take a long time to obtain this documentation; please submit your application as early as possible. Should you require further information, contact the Program Chair.

Lab and Clinical Placement Eligibility:

Lab Requirements:

Proof of a clear (PRCSVS) - annual requirement. You may be required to disclose the contents of the PRCSVS, including all notations, to the placement agencies.

Clinical Placement Requirements:

Successful completion of clinical placement is a requirement for graduation from the Diagnostic Medical Sonography program. To be eligible to participate in clinical placement activities, you must

complete ParaMed requirements and submit:

- Proof of a clear (PRCSVS)- annual requirement. You may be required to disclose the contents of the PRCSVS, including all notations, to the placement agencies.
- Evidence of a current Cardio-Pulmonary Resuscitation Training C.P.R. Basic Rescuer `C` Level certification and Standard First Aid certification.
- Evidence of mask fit-tested for N-95 equivalent masks required for infection-control measures as required by the Ministry of Health and Long-Term Care Guidelines.
- A Health Assessment Form and provide an Immunization Certificate. Applicants must have complete immunization including Hepatitis B, and annual T.B. test (a Chest X-ray is required if the T.B. test is positive) and are required to have annual immunization for influenza by some clinical affiliates.
- All ParaMed Clinical/Field Pre-Placement Health requirements one (1) month prior to starting clinical placements. Applicants must have complete immunization including Hepatitis B, and annual T.B. test (a Chest X-ray is required if the T.B. test is positive) and are required to have annual immunization for influenza by some clinical affiliates. Additional details regarding the requirements including immunizations, may be found in the form mentioned above under the Accepted Applicant tab-Placement Forms.
- Evidence of Workplace Hazardous Materials Information System (WHMIS) and Ontario Health and Safety Awareness (OHSA) Training certification. These courses meet program requirements are free to registered students and can be accessed through the Algonquin College website:
<https://www.algonquincollege.com/safety-security-services/home/occupational-%20health-and-safety/health-safety-training-resources/> .
- Proof of current Non-Violent Crisis Intervention (NVCI) training-Some clinical affiliates require a yearly proof of NVCI training.

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- Proof of current Non Violent Crisis Intervention (NVCI) training. Some clinical affiliates require a yearly proof of NVCI training.

Application Information

DIAGNOSTIC MEDICAL SONOGRAPHY Program Code 1618X01FWO

Applications to full-time day programs must be submitted with official transcripts showing completion of the academic admission requirements through:

ontariocolleges.ca
60 Corporate Court
Guelph, Ontario N1G 5J3
1-888-892-2228

Applications are available online at <http://www.ontariocolleges.ca/> .

Applications for Fall Term and Winter Term admission received by February 1 will be given equal consideration. Applications received after February 1 will be processed on a first-come, first-served

basis as long as places are available.

International applicants please visit this link for application process information:
<https://algonquincollege.force.com/myACint/>.

For further information on the admissions process, contact:

Registrar's Office
Algonquin College
1385 Woodroffe Ave
Ottawa, ON K2G 1V8
Telephone: 613-727-0002
Toll-free: 1-800-565-4723
TTY: 613-727-7766
Fax: 613-727-7632
Contact: <https://www.algonquincollege.com/ro>

Additional Information

If at any time during the program there is a break in the student's progress of one term or more, the student is required to enroll and pass a mandatory Continuing Education course to update practicum skills. The student is responsible for the cost of the required Continuing Education course and must advise the Program Coordinator of their intentions to return to the program six weeks in advance of the start of the semester in which they would like to return. Returning status will be granted based on the availability of placement sites.

The College of Medical Radiation and Imaging Technologists of Ontario has a number of requirements for registration that relate to the past and present conduct of the applicant, as well as mental and physical health conditions. To find out if you would be eligible to practise in Ontario, please access the website: <https://www.cmrito.org/applicants/registration-requirements/>.

Students are required to participate in clinical/lab simulation both as patient and sonographer roles.

The timetable for this program includes, days, and weekends.

Successful completion of clinical placement is a requirement for graduation from the Diagnostic Medical Sonography program. Clinical placement is completed in the second year of study, over two 16-week terms. Placement start times are staggered, with some placements occurring from May - August and September - November and some occurring from June - September and October - December.

During clinical practicum placement, if there are significant professional/safety infractions, students will be removed from clinical site and pending results of an investigation may receive an F grade for the clinical placement course. If this results in a break in clinical placement of one term or more, the student will have to enroll and pass a mandatory Continuing Education course to update skills. The cost of this Continuing Education course will be dependent on the total hours required.

Every effort is made to accommodate student preferences for placements; however, due to the restricted amount of placements in this highly specialized field, students may be required to complete their placements in other areas across Ottawa or Ontario, and may not have the option to select when their placements begin.

All related clinical expenses, such as travel, parking and accommodation for these experiences are the responsibility of the student.

Contact Information

Program Coordinator(s)

- Sylvie Ferguson, <mailto:ferguss@algonquincollege.com>, 613-727-4723, ext. 3568

Course Descriptions

IMG1001 Cross-Sectional Imaging for Sonography

Sonographers co-relate cross-sectional images from multiple modalities to analyze and apply the

best possible methodology to current sonograms. Through investigation of cross-sectional relational anatomy, learners take a multi-modality approach to recognize and relate anatomical structures in cross-section to apply in sonographic protocols. Learners explore terminology used in describing anatomy and pathology in relation to surrounding structures and organs.

Prerequisite(s): none
Corerequisite(s):none

IMG1002 Sonography Physics and Instrumentation I

A thorough understanding of the foundational scientific theory relating to ultrasound is required for successful use of sonographic technology and instruments. Learners investigate the physical principles of ultrasound through basic theories related to the physics of ultrasound, such as properties of sound waves, transducer beam formation, artifacts, pulse echo instrumentation and real time systems. Concentration focuses on transducer construction and function, as well as parameter manipulation for image optimization.

Prerequisite(s): none
Corerequisite(s):none

IMG1004 Obstetrical and Gynecological Sonography I

Sonographers require comprehensive knowledge of the female reproductive system in both gravid and non-gravid conditions. By investigating anatomical structures related to the female reproductive organs in fetal development and the neonatal stage, learners analyze and provide technical impression of normal sonographic images. Learners examine techniques to scan organs of the female reproductive system through cases and demonstrations.

Prerequisite(s): none
Corerequisite(s):none

IMG1007 Sonography Physics and Instrumentation II

Ultrasound equipment is highly technical and requires intricate knowledge of physics and instrumentation to operate safely and effectively. Learners explore advanced physical principles and instrumentation including Doppler physics. By way of demonstration, research and class discussion, learners recognize and analyze usage of physical principles and instrumentation used in the production of high-quality images.

Prerequisite(s): IMG1002
Corerequisite(s):none

IMG1008 Sonographic Pathology of the Abdomen

Sonographers must possess advanced skills in recognition and analysis of sonographic pathology and normal variants. Through in-depth exploration of related findings, learners correlate prior imaging and lab tests to establish the best approach to scanning. Learners examine, recognize and analyze atypical appearances of abdominal organs and surrounding structures on sonograms.

Prerequisite(s): IMG1034
Corerequisite(s):none

IMG1013 Clinical Practicum I

It is necessary for sonographers to be proficient at performing sonography in the clinical environment. Learners integrate applied theoretical knowledge and practical skills to the clinical environment and perform complete ultrasound examinations under the direct and indirect supervision of the clinical educator. Through practice, discussion and mentoring, learners gain proficiency in the role of sonographer.

Prerequisite(s): IMG1007 and IMG1008 and IMG1018 and IMG1035 and IMG1036 and IMG1037 and IMG1038 and IMG1039 and IMG1044 and IMG1047 and IMG1048
Corerequisite(s):none

IMG1014 Clinical Practicum II

Sonographers in the clinical setting are experts in their field and work in a competent and professional manner. Learners enhance their technical, professional, interpersonal and patient management skills to function as a member of the healthcare team. Learners fulfill generalist requirements consistent with Sonography Canada Clinical Skills Assessment Manual(CCSA).

Prerequisite(s): IMG1013

Corerequisite(s):none

IMG1016 Sonography of Superficial Structures

Scanning superficial structures is an inherent skill that the generalist sonographer needs to be competent at differentiating normal from abnormal anatomy. Learners explore anatomy related to superficial structures in detail and observe the proper techniques for scanning and imaging the scrotum, thyroid, breast and other superficial structures.

Prerequisite(s): none

Corerequisite(s):none

IMG1017 Sonography Skills Laboratory I

It is essential that sonographers are experts at utilizing sonographic equipment. Under direct supervision and assistance of the instructor, learners gain practical skills introduced in theory and apply these skills to achieve imaging of various organs. In an applied setting, learners achieve proficiency at scanning individual organs of the abdomen, pelvis and superficial structures. Learners are introduced to best practice methods for interacting with patients.

Prerequisite(s): none

Corerequisite(s):none

IMG1018 Sonography Skills Laboratory II

Essential skills are necessary before integrating into the clinical environment to practice sonography. By scanning various organ systems with direct and indirect supervision, learners expand upon existing skills. Learners perform sonography and duplex Doppler imaging of the lower extremity venous system, advanced abdomen, and extra-cranial arterial system. Through various hands-on projects and simulation, students learn techniques for optimal upper extremity venous imaging and second trimester obstetrical imaging. Communication skills, simulated patient interaction and infection control techniques are taught through various laboratory activities.

Prerequisite(s): IMG1017

Corerequisite(s):none

IMG1034 Abdominal Sonography

Proper imaging requires a thorough knowledge of sonographic anatomy. Learners review anatomical structures of the abdomen and relate the information to sonograms. Learners also develop the ability to assess and recognize normal anatomy on sonographic images. Through examples and demonstrations, learners discover strategies to scan organs of the abdomen in normal patient.

Prerequisite(s): none

Corerequisite(s):none

IMG1035 Professional Practice and Legislation for Medical Imaging Professionals

Legislation and regulations govern the practice of the medical radiation technologist. Students gain an understanding of the roles of professional associations, codes of ethics, scope of practice and evidence-based best practice standards. Professional behaviour expectations and ethical principles related to the professional roles within the healthcare team and the community are examined.

Students explore strategies to endorse patient advocacy, social and cultural inclusion. Students explore different avenues for professional development associated to a professional QA program.

Prerequisite(s): none

Corerequisite(s):none

IMG1036 Obstetrical and Gynecological Sonography II

Recognizing and analyzing abnormalities in fetal development, as well as in the female reproductive system are imperative skills for sonographers. Learners expand upon their knowledge to identify pathology and normal variants within the female reproductive system. The various stages of fetal development are explored up to and including the neonatal stage. By exploring the basics of fetal echocardiography, learners identify variations from the normal fetal heart for technical impression.

Prerequisite(s): IMG1004

Corerequisite(s):none

IMG1037 Vascular Sonography

To be successful at vascular sonography, one requires a thorough knowledge and comprehension of the body's vascular system and its functions. Learners take a comprehensive look at hemodynamic changes that affect spectral analysis and colour Doppler imaging. By exploring the cerebrovascular, peripheral vascular and abdominal vascular systems, learners discover methods for obtaining and analyzing diagnostic sonograms in order to formulate an impression.

Prerequisite(s): none

Corerequisite(s):none

IMG1038 Patient Management for Medical Imaging Professionals

Best practice standards guide the Medical Imaging Professional to provide care to the patient. Students learn the principles of conducting relevant patient assessment to recognize and adapt to diverse patient needs and similarly the legal documentation required. Transmission-based precautions and routine practices of infection control are investigated along with applicable procedures for patients with compromised immunity. Students explore various methods of patient transfers and transport and use of immobilization devices while using proper body mechanics. Students learn to recognize and respond to medical emergencies incorporating the use of assistive devices such as suctioning and oxygen therapy.

Prerequisite(s): none

Corerequisite(s):IMG1039

IMG1039 Patient Management Skills for Medical Imaging Professionals

The support, care and understanding of the patient is the primary role of the Medical Imaging Technologist. Using case scenarios, students practise safe patient transfers and transport methods and apply basic patient assessment skills to ensure patient needs are met. With the use of proper patient interview techniques, the student will determine what interventions are required should a problem arise. Through simulation, the principles of infection control and prevention are rehearsed based on evidence-based infection control standards. Protocols for basic patient care, such as suctioning and monitoring of vital signs, insertion of rectal tubes along with proper departmental and legal documentation guidelines are performed. The students demonstrate effective communication strategies to deliver appropriate care in diverse patient populations.

Prerequisite(s): none

Corerequisite(s):IMG1038

IMG1043 Practice Foundations for Sonography I

Professionals in the field of sonography require knowledge of their roles and responsibilities. In this course, learners explore the foundation, history and future development of sonography. Learners examine how ergonomics relate to sonographers in practice, and how to apply techniques to prevent work-related musculoskeletal disorders common among sonographers. Basic

communication skills and critical-thinking techniques are explored to enhance interactions with the patient, physician and interprofessional healthcare team during sonographic examinations. Preliminary concepts of sonographic impressions are explored along with proper use of permissible medical terms.

Prerequisite(s): none
Corerequisite(s):none

IMG1044 Practice Foundations for Sonography II

Investigating the national standards allows learners to gain knowledge of the sonographer's role in healthcare. Learners explore the scope of practice, the establishment of life-long learning, and the standards of best-practice guidelines for formulating the sonographer's impression. Adaptive communication techniques are explored through case-based learning. Students prepare for clinical training through concepts of basic infection control, emergency codes, privacy and non-violent crisis intervention.

Prerequisite(s): IMG1043
Corerequisite(s):none

IMG1047 Sonography Skills Lab III

Sonographers are required to apply advanced scanning techniques to complement and expand on the standard sonographic examinations. Through hands-on laboratory practice, learners develop focused sonographic skills and strategies to assess detailed anatomy. Learners explore various techniques using diverse sonographic instruments to elevate the visualization of anatomical structures.

Prerequisite(s): IMG1017
Corerequisite(s):none

IMG1048 Sonography Critical Case Review

Diagnostic Medical Sonographers must analyze complex cases and communicate findings appropriately and accurately to the interpreting physician. Learners will review and correlate data from the patient's clinical information and apply it to analyze the sonogram, and formulate the Sonographer's impression. Learners enhance their critical-thinking skills through case-based analysis in keeping with professional practice guidelines for sonography.

Prerequisite(s): none
Corerequisite(s):none