Allied Health Advising Guide

V4.0 (July 2024)

WISCONSIN LUTHERAN COLLEGE
COLLEGE OF HEALTH SCIENCES

Introduction to Allied Health Careers

Health workers that are not physicians, dentists or nurses (~60% of health care workers) are considered allied health professionals by the federal government. Many allied health professionals utilize technologies that provide diagnostic imaging or therapeutic services for the diagnostic evaluation and treatment of a wide range of diseases. These professionals include sonographers, radiographers and nuclear medicine technologists.

Historically, many allied health professionals qualified for entry into practice with an associates-level degree. In recent years, however, there has been a significant push to ground evidence-based allied-health practice in basic science leading to many institutions preferring to hire allied health professionals with baccalaureate degree preparation. Allied health professionals with baccalaureate degrees are more marketable especially for management, education and research positions.

I. Diagnostic Medical Sonography (DMS)

Diagnostic medical sonographers work with patients to obtain images of internal organs and tissues in order to diagnose diseases in collaboration with physicians. Most sonographers are employed by hospitals, however many are also employed in outpatient clinics, diagnostic laboratories, and offices of physicians. Some sonographers choose to specialize. For example, cardiac sonographers specialize in obtaining echocardiograms of the heart while vascular sonographers evaluate blood flow and obstetrical sonographers work with physicians to diagnose congenital birth defects. Ultrasound can be used to view the uterus and fetus during pregnancy, evaluate blood flow, find gallstones, joint inflammation, find nodules in the thyroid and guide needles for biopsy among many other things. Sonographers are “front line” health care workers who must master the use of highly specialized diagnostic tools, but must also be effective communicators capable of working with patients from a wide range of ethnic, religious, and

socioeconomic backgrounds. Sonographers really do spend a lot of time with patients and get to know them on a personal level.

Sonographers were historically trained at the associate's degree level, but sonographers are now commonly trained at the baccalaureate level. Hospitals and clinics are now increasingly seeking sonographers with a bachelor's degree so that they are better prepared for the complexities of a rapidly changing health care system. Finally, the Commission on Accreditation of Allied Health Education Programs is developing a new occupation in Advanced Cardiovascular Sonography (ACS) that includes a 16-18 month training program that requires a bachelor's degree and a sonography credential for entry[1]. The demand for diagnostic medical sonographers is high. The U.S. Bureau of Labor Statistics projects a much higher than average rate of job growth over the next ten years (23%) and a high median salary ($71,410/year in 2017)[2].

The requirements for the Diagnostic Medical Sonography (DMS) major at WLC are available here. To declare a major in DMS, you will need to complete a major declaration form available here. Note that a minimum 2.25 cGPA in the major is required in order to declare your major. For academic or clinical advising questions contact Rob Balza, PhD (rob.balza@wlc.edu) for career counseling or clinical shadowing opportunities contact Shelley Kraus (rachelle.kraus@wlc.edu). The Diagnostic Medical Sonography major at WLC includes a two-year clinical internship experience at either Aurora St. Luke's or Froedtert Hospital's Schools of Diagnostic Medical Sonography after completing two years of general education and basic science coursework at WLC. Upon completion, students will earn a Bachelor of Science degree in Diagnostic Medical Sonography and the ability to sit for the American Registry for Diagnostic Medical Sonography board exam prior to graduation. The clinical internship program typically starts in August of the third year and ends in May of fourth year of college. Tuition and scholarships are not affected by clinical internship training for students, with the exception of tuition-remission students (ie children of faculty/staff at WLC) who will be asked to pay $7,500 per year during their clinical internship training.

During their clinical internship, students majoring in allied health may choose to live off campus. If students wish to live on campus during their clinical internship, they may apply through the Director of Residence Life. Students who choose to live off-campus during their clinical internship are encouraged to continue participation in a wide range of campus events (attend athletic competitions, chapel services, guest lecture series, musical concerts, plays, and other social events). However, they will not be eligible to participate in intercollegiate sports or credit-bearing musical ensembles due to scheduling conflicts nor will they have access to on campus health services or IT support as they will no longer be charged student support or health fees.

Good resources to learn more about careers in sonography include: the American Society of Echocardiography (ASE) and the Society of Diagnostic Medical Sonography (SDMS).

[1] https://www.caahep.org/Students/Program-Info/Advanced-Cardiovascular-Sonography.aspx
[2] Bureau of Labor Statistics. Retrieved on August 6, 2018: https://www.bls.gov/ooh/healthcare/diagnostic-medical-sonographers.htm#tab-1

A. Aurora St. Luke's Medical Center School of Diagnostic Medical Sonography

St Luke's sonography program is accredited by the CAAHEP. WLC is accredited by the HLC. St Luke's School of Sonography recently moved to the Aurora Heil Building: 3031 W. Montana St. Milwaukee, WI 53215. The Advocate Aurora Health care network is the largest non-profit health system in the US with 15 hospitals, 150 clinics and over 70,000 employees. The Aurora network includes 6 trauma centers in the greater Milwaukee area. Students in St. Luke's program typically receive 1700 clinical hours of training per year. The clinical internship at St. Luke's School of Sonography typically consists of two didactic (classroom) and three clinical days per week. Students clock in and clock out for clinical training (professionalism matters). Clinical interns will need to provide their own transportation (you will need access to a reliable transportation) since the clinical training may take place at a variety of Aurora hospitals and clinics in SE Wisconsin.

St Luke's Sonography program provides two tracks: (1) abdominal/OB/GYN/vascular and (2) cardiac/vascular. The abdominal/OB/GYN concentration includes liver, gall bladder, fetal, breast lesions, uterus, cervix or the vaginal canal. The vascular concentration is focused on the vessels and circulatory system outside of the heart. Both the abdominal/OB/GYN and vascular concentrations are led by Laura Sorenson (laura.sorenson@aah.org or 414-747-4352). The cardiac concentration is led by Chris Kramer (christopher.kramer@aah.org) and focuses on transthoracic and transesophageal echocardiograms, stress echocardiograms and fetal/pediatric echocardiography used to diagnose congenital heart defects. Current WLC intern at St. Luke's (Taylor Kedsch <Taylor.Kedsch@aah.org>) has offered to answer questions from any students that are interested in this program. Aurora St. Luke's is the only nationally ranked heart hospital in the state of Wisconsin.[3] All students receive training in vascular sonography at St. Luke's because it is such a marketable skill. Each track admits 8-10 students per year. Aurora almost always hiring new sonographers for their team. Aurora's sonography program boasts 100% ASLMC licensure pass rates and 100% job placement over the past three years.

The selection process for St Luke's Sonography program is competitive. In 2022, St. Luke's had 72 applicants, interviewed 50 and offered internships to 25 candidates. St. Luke's plan to accept only 20 students for the 2023 year. Competitive candidates typically have >3.0 GPA. Here is an outline of the process.

1. Complete application (available here). **Submit completed application with all other materials (transcripts, recommendations, shadowing documentation, etc.) to Dr. Balza with enough time to mail before the postmark deadline of December 31. Here is a link to an application checklist.** CPR certification is no longer a prerequisite for the application as St Luke's will provide this training for you.[4]
2. It is strongly recommended that you submit an application to graduate during the fall semester of your sophomore year. In this way, the registrar will review your academic transcript to be sure you are on track to graduate before your final semester at WLC.
3. Current Certified Nurse Assistant (CNA)

[3] Retrieved on December 18, 2020: https://www.aurorahealthcarefoundation.org/blog/aurora-st-lukes-cardiology-and-heart-surgery-program-gets-top-50-ranking

[4] Personal correspondence from Laura Sorenson December 27, 2022.

a. Training course must be complete by December 31 of application year. See Appendix XI for a list of CNA training programs in Wisconsin.
b. Verification of patient care experience using the approved form documenting at least 100 patient care work hours (not including the course) by the date of interview. The patient care hours may be obtained outside of CNA (imaging assistants, patient transporters, exercise physiologists, etc). Additional patient care hours give applicants a competitive advantage.

4. Job shadowing (>8 hours) of a medical sonographer is highly recommended (but not required) for applicants in the 2022-23 cycle.[5] Job shadowing is critical for selection of the proper track. Any applicant who does not complete the recommended in-person job shadowing requirement must complete the virtual shadowing videos available in Appendix I. To request job shadowing opportunities at Aurora, please email matthew.ryan@aah.org or 414-747-4358 to get the process started.
    a. Minimum 4 hours in cardiac
    b. Minimum 4 hours in general
    c. All experiences must be in hospital or medical center and documented using the approved form.
5. Completion of the following prerequisites with a minimum of "C" or better and >3.0GPA in science (grades are especially important in A&P and Pathophysiology, they are a bit more forgiving in physics) is required (See Appendix II for sample academic program). *St. Luke's will accept any courses that WLC accepts in transfer as long as they are associated with a letter grade.*
    a. College algebra, statistics or higher math (MAT117 or MAT188 or higher)
    b. Communication (COM101)
    c. Human Anatomy & Physiology I & II (BIO225 & 255) – encouraged to complete before interviews if possible
    d. Medical Ethics & Law (NUR405)
    e. Medical Terminology (BIO323 or BIO223[6])
    f. Pathophysiology (BIO355)
    g. Physics (PHY151)
6. All post-secondary transcripts
    a. Including other colleges and universities that the applicant attended.
7. Submit non-refundable $50 application fee (personal check made out to "St. Luke's Medical Center" is appropriate).
8. Autobiography (1-2 pages). This autobiography should be signed and dated at the bottom.
9. After St Luke's receives the completed applications, they typically invite qualified applicants to attend a mandatory information session in February. If the applicant fails to attend one of the information sessions, they will not be allowed to proceed with their application. The dates for these information sessions can be found on their website.
10. Interview (typically scheduled in March and April). This is a combination of group and individual interviews used to gauge professionalism, passion for patient care and knowledge of sonography). Interviews are about 30 minutes long. In 2020, St. Luke's school of Sonography received 38 applications, interviewed 31 and offered internships to 20 students. Most qualified applicants are accepted. Higher grades, knowledge

[5] Personal correspondence from Laura Sorenson October 3, 2022.
[6] BIO223 was added as an alternative to BIO323 in a curricular proposal passed by the curriculum committee in October 2021.

pertinent to the field of sonography and more patient care experience advantageous for applicants. Business casual dress (no jeans/scrubs are appropriate). Typical interview questions include:

a. Why are you interested in sonography? (opportunity to demonstrate knowledge in the field).
b. What do you know about Aurora? Why is Aurora a good fit for you?

Appendix I. Form for documentation of virtual job shadowing for the "2+2" Diagnostic Medical Sonography program with Aurora St. Luke's Medical Center.

Aurora St. Luke's Medical Center®
of Aurora Health Care Metro, Inc.

School of Diagnostic Medical Sonography

Job Shadowing

For application year 2020-2021, due to COVID 19 restrictions, applicants to the DMS program will be required to view the following videos on the profession of Sonography in lieu of in person job shadowing experience at a hospital and/or medical clinic.
In addition to viewing the videos, please write a written response to the questions on the second page. Responses should be submitted on a separate word document along with the attestation page.
By signing and initialing this document, the signee is attesting that they have viewed each video in its entirety. The document should be submitted along with all other application materials at the time of application.

Initials	Occupation
_____	https://www.youtube.com/watch?v=GL617ZVj2wA
_____	https://www.youtube.com/watch?v=4K6tf27z6wU
	General Sonography
_____	https://www.youtube.com/watch?v=j9ry2htIE7E
	A day in the life of a sonographer
_____	https://www.youtube.com/watch?v=27aD_oSrQTE
	Vascular Sonography
_____	https://www.youtube.com/watch?v=vYGPCfXH1wQ
_____	https://www.youtube.com/watch?v=oJp2EmF0ekQ
	Echocardiography
_____	https://www.youtube.com/watch?v=8N6flQ7r5BI
_____	https://www.youtube.com/watch?v=Kirg2GuESsE

Signature **Date**

Reflecting on the videos, please respond to the following questions:

1) What is a sonographer?
   a. Where can you work as a sonographer?
2) Ultrasound is used in a wide variety of clinical exams, list what they are and what each primarily focuses on.
3) Are sonographers able to diagnose?
4) Is ultrasound considered invasive? Is radiation used?
5) What does a sonographer place against a patient's skin to produce high frequency sound waves?
6) What anatomy is mentioned in the Diagnostic Medical Sonography – It's More Than a Picture video?
7) True or false: Working as a sonographer increases your risk for work related injuries, especially if you don't focus on proper ergonomics.
8) Do you need to have good communication skills in order to be a sonographer? Yes or no. Why?
9) What is the role of the sonography student as it relates to patient care?
10) Why would you like to be a sonographer versus pursuing another career in healthcare?
11) What are the main differences between general, vascular, and cardiac sonography?
12) In your own words, describe what a day in the life of a sonographer looks like after watching the videos.
13) What does SDMS stand for and what can they help you learn more about?

Appendix II. Sample Program for "2+2" Diagnostic Medical Sonography program with Aurora St. Luke's Medical Center.

Freshman Year, Semester 1 (WLC)	**Freshman Year, Semester 2 (WLC)**
CHE161 General Chemistry 1 (4)[7]	BIO202 Principles of Biology 2 (4)
CHE168 General Chemistry Lab 1 (1)	COM101 Intro to Communication (3)
MAT117 (or higher) (3)	PHY151 General physics 1 (4)
Gen Ed COL101 (1)	BIO223 or 323 Medical Terminology (2)[8]
Gen Ed Health & Wellness (1)	Gen Ed Theology (3)
Gen Ed Fine Arts (3)	Gen Ed Liberal Arts Seminar (1)
Gen Ed Writing & Rhetoric (3)	
16 credits	17 credits

Summer between Freshman & Sophomore year = Basic patient care (CNA, CPR & 8 hours job shadowing)

Sophomore Year, Semester 1 (WLC)	**Sophomore Year, Semester 2 (WLC)**
BIO225 Anatomy and Physiology I (4)	NUR405 Issues, Trends & Ethics…(3)[9]
PHY152 General physics 2 (4)	BIO255 Anatomy and Physiology II (4)
BIO355 Pathophysiology (3)	Elective course in ANT, BIO or NUR (3)
Gen Ed (3)	Gen Ed Theology (3)
Gen Ed Literature (3)	Gen Ed History (3)
Gen Ed Capstone (2)	Gen Ed Liberal Arts Capstone (1)
18 credits	18 credits

Junior Year (St. Luke's General / Vascular Sonography Track)		
Trimester 1	**Trimester 2**	**Trimester 3**
DMS111 Intro Sonography	DMS121 Abdom Sonography II	DMS131 OB/GYN Sonography III
DMS112 Abdom Sonography	DMS122 OB/GYN Sonography II	DMS132 Specialized Sonography
DMS113 OB/GYN Sonography I	DMS123 Vascular Sonography II	DMS133 Clinical Education II
DMS114 Vascular Sonography I	DMS124 Sonography Prin. & Intru	
DMS115 Clinical Education I	DMS 125 Clinical Education II	

Trimester 1	**Trimester 2**
DMS211 Intro Pediatric Sonography	DMS221 Introduction to MSK
DMS212 Seminar in OB/GYN	DMS222 Seminar in Professional Development
DMS213 Vascular Sonography III	DMS223 Seminar in Management & Education
DMS214 Intro Breast Imaging	DMS224 Clinical Education IV
DMS215 Clinical Education IV	

[7] Courses required by St. Luke's Sonography program are highlighted in red. A minimum of "C" or better is required in these courses and an overall 3.0 GPA in these required courses is recommended.
[8] NOTE: the prerequisites for this course are BIO201, 202, 225 **OR** 255 so Sonography students will be prepared for this course having taken BIO202 in their Freshman year.
[9] This course has been revised by the Nursing department so that Sonography students may enroll.

B. Froedtert School of Diagnostic Medical Sonography

Froedtert Hospital (located in the Milwaukee Regional Medical Center Pavilion across the street from WLC) has partnered with WLC to provide clinical training in sonography since 2021. Froedtert interns will not only train at the flagship hospital, but will also rotate through smaller community clinics (Menomonee Falls, West Bend, etc) and other hospitals (e.g. Children's Hospital of Wisconsin). Froedtert's sonography internships have the opportunity to experience up to 23 separate clinical sites that include a wide range of specialties. Time spent during the two year internship at Froedtert count toward seniority, PTO accrual and salary considerations. Froedtert's program is typically 5 semesters (8:00AM-4:30PM, M-F with five vacation weeks and 8PTO days). A sixth semester during the second summer is only used if needed to remediate one or more skills. The director of the Froedtert School of Diagnostic Medical Sonography is Nathan Wojciechowski (nathan.wojciechowski@froedtert.com or 414-805-4937).

Froedtert's sonography program is accredited by the CAAHEP. WLC is accredited by the HLC. Froedtert's sonography program is new having just launched in 2015. Froedtert's program provides fully training in general, vascular, and OB/GYN ultrasound techniques). Froedtert's School of Sonography has achieved 100% registry pass rates and 100% employment rates in the past five years.

Job shadowing opportunities are available at Froedtert in sonography. You can apply for shadowing opportunities here. Please note that at times this system gets a little backed up and it might take a week or two to hear back. Please be patient.

Selection process for Froedtert's Sonography program:

1. Complete application (available here) by January 31 of your sophomore year.
2. It is strongly recommended that you also submit an application to graduate with the WLC registrar during the fall semester of your sophomore year. In this way, the registrar will review your academic transcript to be sure you are on track to graduate before your final semester at WLC.
3. Demonstrate Patient Care Experience. In 2022-23, students that Froedtert offered an internship to had a median of 600 clinical experiences hours.
    a. Current Certified Nurse Assistant (CNA) license and work hours is the most common way to demonstrate patient care experience. Use this form from Froedtert to document your experiences. See Appendix XI for a list of CNA training programs in Wisconsin.
    b. Job shadowing a medical sonographer is also important for applicants. Again, use this form to document job shadowing experiences as well. You can apply for shadowing opportunities here.
4. Completion of the following prerequisites with a minimum of "C" or better and >3.0GPA (See Appendix III for sample academic program). In 2022-23, students that Froedtert offered an internship to had a median of a 3.6 cGPA. *Froedtert will accept any courses that WLC accepts in transfer as long as they are associated with a letter grade.*[10]
    a. College algebra, statistics or higher math (MAT117 or higher math)
    b. Communication (COM101)
    c. Human Anatomy & Physiology I & II (BIO225 & 255)
    d. Medical Ethics & Law (NUR405)

[10] Personal correspondence with Nathan Wojciechowski on August 31, 2022.

e. Medical Terminology (BIO323 or BIO223[11])
f. Pathophysiology (BIO355)
g. Physics (PHY151, 152)

5. Two professional references
    a. College professor or current supervisor/manager are appropriate.
    b. Your references may choose to use this form or a traditional letter of recommendation.
6. Personal statement
    a. Submit a one-to-two-page personal statement in the student's own handwriting stating why he/she wishes to become a sonographer. (Upload document on application.)
7. All post-secondary transcripts
    a. Official transcripts must be mailed directly from the WLC registrar's office.
8. Mail application material to: Froedtert Hospital School of Diagnostic Medical Sonography, 9200 W. Wisconsin Ave., Milwaukee, WI 53226. The school does not notify candidates of the arrival of application materials. All application materials become the property of Froedtert Hospital School of Diagnostic Medical Sonography. Froedtert reserves the right to refuse the forwarding or copying of these materials. Upon receipt of the above items, we will review all application elements will.
9. Information session. Applicants who have completed all prerequisite classes (with passing grade of C or above) and score a minimum of one point in each section of Part I will receive an invitation, via e-mail, to an information session. These sessions provide the applicant with an overview of the program and an opportunity to ask questions. View a map of the interview location. The event will be held at Froedtert Hospital. Applicant selects an interview date at the end of the informational session. Meeting the requirements does not guarantee admission to the program.
10. A personal interview is mandatory for consideration of acceptance. Interviews are scheduled from February through March. On the day of the interview the applicant will be interviewed by a panel of 2-3 faculty members. Following the interview, an interview assessment form will be completed, by each panel member, which includes a rating of the applicant's:
    a. Professional appearance
    b. Professionalism and maturity
    c. Communication and interpersonal skills
    d. Initiative/motivation
    e. Critical thinking
11. The Froedtert Admissions Committee will meet in March to select the class for the upcoming September start date. The number of students selected each year is determined on the current job market and clinical spots. The Program Director will notify all applicants of the final decision via e-mail by April 1. In recent years, eight initial acceptances have been extended, followed by 2-3 more eventually accepted fromt eh waitlist. Selected candidates must:
    a. Return the confirmation letter
    b. Submit a non-refundable commitment fee, $100.
    c. Upon receipt of the above items, the student will receive an e-mail from the DMS program outlining requirements prior to starting the program (drug and background checks, educational verification, etc). Along with orientation information from the Froedtert Hospital Human Resource department one month prior to the fall start date.

[11] BIO223 was added as an alternative to BIO323 in a curricular proposal passed by the curriculum committee in October 2021.

Appendix III. Sample Program for "2+2" Diagnostic Medical Sonography program with Froedtert.

Freshman Year, Semester 1 (WLC)	**Freshman Year, Semester 2 (WLC)**
CHE161 General Chemistry 1 (4) [12]	BIO202 Principles of Biology 2 (4)
CHE168 General Chemistry Lab 1 (1)	COM101 Intro to Communication (3)
MAT117 (or higher) (3)	PHY151 General physics 1 (4)
Gen Ed COL101 (1)	BIO223 or 323 Medical Terminology (2)[13]
Gen Ed Health & Wellness (1)	Gen Ed Theology (3)
Gen Ed Fine Arts (3)	Gen Ed Liberal Arts Seminar (1)
Gen Ed Writing & Rhetoric (3)	
16 credits	17 credits

Summer between Freshman & Sophomore year = Basic patient care (CNA, CPR & 8 hours job shadowing)

Sophomore Year, Semester 1 (WLC)	**Sophomore Year, Semester 2 (WLC)**
BIO225 Anatomy and Physiology I (4)	NUR405 Issues, Trends & Ethics…(3) [14]
PHY152 General physics 2 (4)	BIO255 Anatomy and Physiology II (4)
BIO355 Pathophysiology (3)	Elective course in ANT, BIO or NUR (3)
Gen Ed (3)	Gen Ed Theology (3)
Gen Ed Literature (3)	Gen Ed History (3)
Gen Ed Capstone (2)	Gen Ed Liberal Arts Capstone (1)
18 credits	18 credits

[12] Courses required by St. Luke's Sonography program are highlighted in red. A minimum of "C" or better is required in these courses and an overall 3.0 GPA in these required courses is recommended.
[13] NOTE: the prerequisites for this course are BIO201, 202, 225 **OR** 255 so Sonography students will be prepared for this course having taken BIO202 in their Freshman year.
[14] This course has been revised by the Nursing department so that Sonography students may enroll.

II. Radiologic Technology (RDT)

Radiologic technologists (also known as radiographers) administer medical imaging exams (X-rays, CT scans, mammograms, MRIs, contrast images, fluoroscopy, etc.) in collaboration with physicians who specialize in radiology. Most radiologic technologists are employed by hospitals, however many are also employed in outpatient clinics, diagnostic laboratories, nursing homes, etc. Radiographers are "front line" health care workers who must be effective communicators who can relate to and work with patients from a wide range of ethnic, religious, and socioeconomic backgrounds. Radiography is also a "hands on" profession that deals with patients of all ages. Here is an introductory video that summarizes careers in radiography.

The demand for radiologic technologists is high. The U.S. Bureau of Labor Statistics reports a very low 2% unemployment rate, a high median salary ($62,280/year in 2019) and predicts a 7% increase in jobs (2019-2029)[15]. Hospitals and clinics are now increasingly seeking radiologic technologists with a bachelor's degree so that they are better prepared for the complexities of a rapidly changing health care system. In fact, on the East Coast of the U.S., hospitals are increasingly looking to recruit "radiology assistants" who are typically trained at the master's degree level similar to physician assistants, anesthesiology assistants, pathology assistants, etc.

The requirements for the Radiologic Technology (RDT) major at WLC are available here. To declare a major in RDT, you will need to complete a major declaration form available here. Note that a minimum 2.25 cGPA in the major is required in order to declare your major. For academic or clinical advising questions contact Rob Balza, PhD (rob.balza@wlc.edu) for career counseling or clinical shadowing opportunities contact Rochelle Horn (rochelle.horn@wlc.edu). The Radiologic Technology major at WLC includes a two-year clinical internship experience at one of four clinical affiliates (be sure to check their websites to be sure of the internship application requirements):

Aurora St. Luke's School of Radiologic Technology
Froedtert School of Radiologic Technology
Ascension St. Joseph Hospital School of Radiologic Technology
Ascension All Saints Hospital School of Radiologic Technology

Upon successful completion of at least two years of general education and basic science coursework at WLC and a successful two-year clinical internship, students will earn a Bachelor of Science degree in Radiologic Technology and the ability to sit for the American Registry of Radiologic Technologists (ARRT) board exam prior to graduation. This national license will allow radiographers to find work in any state, but some states may require additional fees or licensure for specific modalities.[16] The clinical internship program typically starts in August of the third year and ends in May of fourth year of

[15] Bureau of Labor Statistics. Retrieved on December 16, 2020: https://www.bls.gov/ooh/healthcare/radiologic-technologists.htm
[16] Private communication with Ron Marker (Director of Radiologic Technology at All Saints Hospital).

college. Tuition and scholarships do not typically change during clinical internship training for students, the exception to this however is tuition-remission students (ie children of faculty/staff at WLC) will be asked to pay a minimum of $7,500 per year during their clinical internship training.

During their clinical internship, students majoring in allied health may choose to live off campus. If students wish to live on campus during their clinical internship, they may apply through the Director of Residence Life. Students who choose to live off-campus during their clinical internship are encouraged to continue participation in a wide range of campus events (attend athletic competitions, chapel services, guest lecture series, musical concerts, plays, and other social events). However, they will not be eligible to participate in intercollegiate sports or credit-bearing musical ensembles due to scheduling conflicts nor will they have access to on campus health services or IT support as they will no longer be charged student support or health fees.

Good resources to learn more about careers in sonography include: the American Society of Radiologic Technologists (ASRT).

1. Aurora St. Luke's School of Radiologic Technology

Aurora St. Luke's Medical Center School of Radiologic Technology recently moved to the Heil building at St. Luke's main campus at 3031 W. Montana St. in Milwaukee, WI. The Advocate Aurora Health care network is the largest non-profit health system in the US with 15 hospitals, 150 clinics and over 70,000 employees. The Aurora network includes 2 NICUs (for pediatric imaging) and 6 trauma (level 2-4) centers in the greater Milwaukee area. St. Luke's has partnered with WLC to provide clinical training in radiology since 2019. St Luke's Radiologic Technology program is accredited by the JRCERT. WLC is accredited by the HLC. The clinical internship at St. Luke's School of Radiologic Technology typically consists of two didactic (classroom) and three clinical days per week. Students clock in and clock out for clinical training (professionalism matters). Clinical interns will need to provide their own transportation (you need a car) since the clinical training may take place at a variety of Aurora hospitals and clinics in SE Wisconsin.

St Luke's School of Radiologic Technology led by Breanne Rosenbaum (Program Director and Supervisor). You can contact her at Breanne.rosenbaum@aah.org or 414-747-4335. Interns from St Luke have achieved 100% licensure pass rate on the first try for over 30 years. In the last three years >75% of interns hired within Aurora, those that aren't are typically because they are moving out of the region (100% employment post-graduation overall). Advocate Aurora has been ranked a top 10 non-profit health system. Aurora St. Luke's interns rotate through 8 different clinical sites (including two with NICU's). Clinical schedule is typically 7:00AM-3:30PM (3 days per week). This clinical internship is about 21 months long (eg August 29, 2022 – June 14 2024). Interns are allowed up to 80 hours sick / personal leave. Interns complete over 2,000 clinical hours. Clinical rotations include emergency, surgery, general x-rays, fluoroscopy, portable X-ray, CT/3D imaging, interventional, MRI, ultrasound and elective rotations. Average book fees are about $1,200 for the entire program (although used books may be available at reduced cost). The registry exam fee is about $225.

The selection process for St Luke's Radiography program is competitive. In 2022, St. Luke's had 33 applicants, interviewed 26 and offered internships to 25 candidates. Competitive candidates typically have >3.0 GPA. Here is an outline of the process.

1. Mail application (available here) to School of Radiologic Technology; Aurora Heil Building; 3031 W. Montana St., Suite F North.; Milwaukee, WI 53215
    a. **Application deadline is January 30, 2024** (must be post-marked by this date). Please type application if possible. Provide unofficial transcripts if official transcripts do not yet include fall semester grades – official transcripts will need to be submitted eventually.

    b. Be sure to type and proof read the application before mailing
2. It is strongly recommended that you submit an application to graduate with the WLC Registrar's office during the fall semester of your sophomore year. In this way, the registrar will review your academic transcript to be sure you are on track to graduate before your final semester at WLC.
3. Current CPR certification
    a. successful completion of an American Heart Association Basic Life support class is recommended but not required.
4. Current Certified Nurse Assistant (CNA)
    a. Training course completion is recommended but not required. See Appendix XI for a list of CNA training programs in Wisconsin.
    b. Health care experience (or at least customer service experience of some sort) is important.
5. Job shadowing
    a. Information for arranging job shadowing at Aurora St. Luke's Radiology department is available here. Students should contact Tracie Maxwell directly to schedule a job shadow (tracie.maxwell@aah.org or 414-747-4357). Applicants should complete and document shadowing experiences before submitting their application. The applicant should also expect to answer questions during the interview regarding the videos they've viewed.
6. Completion of the following prerequisites with a minimum of "C" or better and >2.5 math and science GPA. Preference is given to applicants with a strong math and science background (See Appendix IV for sample academic program).
    a. College algebra or higher math (minimum 3 credits)
    b. Human Anatomy & Physiology (minimum 3 credits)
    c. Medical Terminology (minimum 2 credits)
7. A brief autobiography
    a. 1-2 typed pages
    b. Should include reasons for pursuing radiologic technology education
8. Three professional references
    a. At least two out of the three references must be professional (college professor or current supervisor/manager). One reference may be personal, but professional references are preferred.
    b. Ask reference to submit reference check list along with formal letter of reference
9. All post-secondary transcripts
    a. Including other colleges and universities that the applicant attended. High school transcripts are not needed. These must be sent directly from the institution. High school transcripts are not needed.
10. All applicants must submit a non-refundable $25 application fee
11. Interview (March 4-8, 2024)
    a. All applicants will be invited to attend a mandatory information session before interviewing. These will be offered on the evenings of February 8 and 13.
    b. (typically scheduled in February and March). This is a combination of group and individual interviews used to gauge communication, professionalism, passion for patient care and knowledge of radiologic technology). Be prepared to explain why you are a good fit for the program. Familiarize yourself with the mission/vision of St. Luke's to be sure it is a good fit for you.
    c. Selection begins April 1, Acceptance of offer = $500 deposit (nonrefundable upon enrollment) pending drug test, background screen, internship starts around Aug 31.

d. Internship start date is typically late in August. The typical intern schedule is M-F,

7:00AM-3:30PM. This program is a full-time commitment.

Appendix III. Form for documentation of virtual job shadowing for the "2+2" Radiologic Technology program with Aurora St. Luke's Medical Center.

Aurora St. Luke's Medical Center®
of Aurora Health Care Metro, Inc.

School of Radiologic Technology

Job Shadowing

Information for arranging job shadowing at Aurora St. Luke's Radiology department is available here. Students should contact Tracie Maxwell directly to schedule a job shadow (tracie.maxwell@aah.org or 414-747-4357). Applicants should complete and document shadowing experiences before submitting their application.

The applicant should also expect to answer questions during the interview regarding the videos on the radiography profession available below. By signing this document, the signee is attesting that they have viewed each video in its entirety. If applying to the program, this document should be submitted along with any application materials.

Occupation

https://youtu.be/YNrSruXTRC4
https://www.youtube.com/watch?v=IyAc3dPKf1Q
https://youtu.be/gGkgYrwq-KA

A Day in the Life of a Radiologic Technology Student

https://youtu.be/l6qQpGuhhng

Signature:

Date:

Appendix IV. Sample Program for "2+2" Radiologic Technology program with Aurora St. Luke's Medical Center.

Freshman Year, Semester 1 (WLC)	**Freshman Year, Semester 2 (WLC)**
MAT118 College Algebra (or higher)	BIO202 Principles of Biology 2
ENG101 Writing & Rhetoric	COM101 Intro to Communication
CHE161 General Chemistry 1[17]	BIO223 or 323 Medical Terminology
CHE168 General Chemistry Lab 1	Gen Ed (Humanities)
PSY101 Introduction to Psychology	Gen Ed (LAS101)
Gen Ed (COL101)	Gen Ed (Theology)
Gen Ed (Foreign language if needed)	Gen Ed (Foreign language if needed)
17-20[18] credits	17-20[19]credits

Sophomore Year, Semester 1 (WLC)	**Sophomore Year, Semester 2 (WLC)**
BIO225 Anatomy and Physiology I	BIO255 Anatomy and Physiology II
BIO355 Pathophysiology	ANT312 Human Osteology or BIO331 Cell Biology
Gen Ed (History)	Gen Ed
Gen Ed	Gen Ed (Theology)
Gen Ed	Gen Ed (LAS401)
PED100 (Physical Education	Gen Ed
16-17 credits	16-17 credits

Junior Year (St Luke's curriculum)		
Trimester 1	**Trimester 2**	**Trimester 3**
Radiographic Proc I	Seminar in Radiography I	Radiographic Procedures III
Radiation Protection	Principles of Imaging II	Clinical Ed III
Clinical Ed I	Radiographic Procedures II	
	Clinical Ed II	
10 credits	14 credits	7 credits

Senior Year (St Luke's curriculum)		
Trimester 1	**Trimester 2**	**Trimester 3**
Radiographic Physics I	Radiographic Physics II	Professional Development
Digital Imaging	Seminar in Radiography II	Clinical Ed VI
Cross Sectional Anatomy	Radiation Biology	
Radiographic Procedures IV	Radiographic Pathology	
Radiographic Ed IV	Clinical Ed V	
13 credits	12 credits	6 credits

[17] Courses required by the WLC RDT major are highlighted in red. Other courses required by St Luke's School of Radiography are highlighted in orange.

[18] If two sequential units of foreign language are required, it may be advisable to complete one or more courses during J-term or Summer to avoid an overload during the semester.

[19] If two sequential units of foreign language are required, it may be advisable to complete one or more courses during J-term or Summer to avoid an overload during the semester.

2. Froedtert School of Radiologic Technology

Froedtert Hospital's School of Radiologic Technology (located in the Milwaukee Regional Medical Center Pavilion across the street from WLC) has partnered with WLC to provide clinical training in radiography since 2019. Froedtert typically accepts 16-18 (max 20) interns per year. Froedtert's Radiologic Technology program is accredited by the JRCERT. WLC is accredited by the HLC. Froedtert hospital is a level 1 trauma center, so Rad Tech interns see a lot of "crazy stuff" during their training. Froedtert interns will gain valuable experience in state-of-the-art operating rooms, computed tomography (CT), and magnetic resonance imaging (MRI). In addition to the Milwaukee Regional Medical Center (MRMC), Froedtert Rad Tech interns also benefit from experience in 7 off-site clinical rotations (as far north as West Bend and as far South as New Berlin). Rotations at the MRMC include Froedtert, Children's and the Sports Medicine Clinic). Froedtert puts a high degree of emphasis on professionalism (interns must wear scrubs at all times).

Froedtert's School of Radiologic Technology led by Kyle Theine (kyle.theine@froedtert or 414-805-4999). Interns from Froedtert have achieved 100% licensure pass rate four of the past five years. All of the radiologic technologists who graduated from Froedtert & the Medical College of Wisconsin's School of Radiologic Technology had a job offer before graduating in the past few years[20]. In 2023, all 15 Froedtert interns had jobs before graduation (12 accepted jobs at Froedtert, 2 at Children's Hospital of Wisconsin, and 1 at Aurora). **Froedtert & the Medical College of Wisconsin's School of Radiologic Technology now only accepts students in a bachelor's degree granting program such as the one offered by WLC**.

Selection process for Froedtert's Radiography program (a description may be found here).

1. Complete the online application. Applications accepted between June 1 and January 31.
2. It is strongly recommended that you submit an application to graduate with the WLC Registrar's office during the fall semester of your sophomore year. In this way, the registrar will review your academic transcript to be sure you are on track to graduate before your final semester at WLC.
3. Request submission of official transcripts from all post-secondary colleges/universities that you attended.
    a. Must be postmarked by January 31 of application year (it is your responsibility to be sure that your references remember to submit these on time)
    b. Must be mailed directly by the institution to: Kyle Theine - Radiography Program Director; Froedtert Hospital School of Radiologic Technology; 9200 West Wisconsin Avenue; Milwaukee, WI 53226-3596
4. Three professional references (provide this form to them).
    a. Must be postmarked by January 31 of application year (it is your responsibility to be sure that your references remember to submit these on time)
    b. Must be mailed directly by the reference to: Kyle Theine - Radiography Program Director; Froedtert Hospital School of Radiologic Technology; 9200 West Wisconsin Avenue; Milwaukee, WI 53226-3596
5. Submit $25 application fee (in the form of a money order).

[20] Personal communication with Kyle Theine, Program Director for the Froedtert School of Radiologic Technology (January 17, 2018)

a. Must be postmarked by January 31 of application year (it is your responsibility to be sure that your references remember to submit these on time)
b. Must be mailed to: Kyle Theine - Radiography Program Director; Froedtert Hospital School of Radiologic Technology; 9200 West Wisconsin Avenue; Milwaukee, WI 53226-3596

6. College transcripts (no need for high school transcripts). Completion of the following prerequisites with a minimum of "C" or better (See Appendix V for sample academic program). *Froedtert will accept any courses that WLC accepts in transfer as long as they are associated with a letter grade.*[21]
    a. College algebra or higher math (minimum 3 credits)
    b. Human Anatomy & Physiology I and II (8 credits)
    c. Medical Terminology (minimum 2 credits)
    d. One written or oral communication course (minimum 3 credits)
    e. Applicants with four or more (minimum of one required) additional sciences with GPA >3.0 (minimum >2.0) will be given preference. Physics is also recommended (although not required). Applicants must have a minimum of 60 post-secondary credits.
7. Work experience
    a. Preference will be given to applicants with 3 or more years of health care experience (CNA, medical scribe, etc is a big plus). At least 6 months of general or volunteer experience is required. See Appendix XI for a list of CNA training programs in Wisconsin.
    b. Job shadowing is recommended (but not required). Due to the pandemic, Froedtert is only accepting a limited job shadow requests using this online portal. Please note that documented proof of the COVID, flu, MMR vaccines are required for these opportunities.
8. Interview
    a. All applicants will be invited to attend a mandatory information session before interviewing (typically scheduled in February and March). This is a combination of group and individual interviews used to rate professional appearance, personality, communication, initiative/motivation and critical thinking. Be prepared to explain why you are a good fit for the program.
    b. Applicants will be notified of the final decision via email by April 1. To confirm acceptance the applicant must return the confirmation letter and submit a $100 commitment fee.

[21] Personal communication with Kyle Theine, Program Director for the Froedtert School of Radiologic Technology (January 17, 2018)

Appendix V. Sample Program for "2+2" Radiologic Technology program with Froedtert

Freshman Year, Semester 1 (WLC)	Freshman Year, Semester 2 (WLC)
MAT118 (or higher math)	BIO202 Principles of Biology 2
ENG101 Writing & Rhetoric	COM101 Intro to Communication
CHE161 General Chemistry 1[22]	BIO223 or 323 Medical Terminology
CHE168 General Chemistry Lab 1	Gen Ed (Humanities)
PSY101 Introduction to Psychology	Gen Ed (LAS101)
Gen Ed (COL101)	Gen Ed (Theology)
Gen Ed (Foreign language if needed)	Gen Ed (Foreign language if needed)
17-20[23] credits	17-20[24]credits

Sophomore Year, Semester 1 (WLC)	Sophomore Year, Semester 2 (WLC)
BIO225 Anatomy and Physiology I	BIO255 Anatomy and Physiology II
BIO355 Pathophysiology	ANT312 Human Osteology or BIO331 Cell Biology
Gen Ed	Gen Ed
Gen Ed (History)	Gen Ed (Theology)
Gen Ed	Gen Ed (LAS401)
PED100 (Physical Education	Gen Ed
16-17 credits	16-17 credits

Junior Year (Froedtert)		
Trimester 1	**Trimester 2**	**Trimester 3**
Intro Radiologic Sci	Seminar in Radiography I	Imaging Procedures III
Radiation Protection	Principles of Imaging II	Radiographic Clinical III
Principles of Imaging I	Imaging Procedures II	
Imaging Procedures I	Radiographic Clinical II	
Radiographic Clinical I		
14 credits	14 credits	7 credits

Senior Year (Froedtert)		
Trimester 1	**Trimester 2**	**Trimester 3**
Radiographic Physics I	Radiation Biology	Professional Development
Digital Imaging	Seminar in Radiography II	Radiographic Clin Ed III
Cross Sectional Anatomy	Independent Study	Radiography Clinical VI
Imaging Procedures IV	Radiographic Pathology	
Radiographic Clinical IV	Radiographic Physics II	
	Radiography Clinical V	

[22] Courses required by the WLC RDT major are highlighted in red. Other courses required by Froedtert's School of Radiography are highlighted in orange.
[23] If two sequential units of foreign language are required, it may be advisable to complete one or more courses during J-term or Summer to avoid an overload during the semester.
[24] If two sequential units of foreign language are required, it may be advisable to complete one or more courses during J-term or Summer to avoid an overload during the semester.

13 credits	13 credits	6 credits

3. Ascension St Joseph School of Radiologic Technology

Ascension St. Joseph's School of Radiography (located in northwest Milwaukee) has partnered with WLC to provide clinical training in radiologic technology since 2019. St Joseph's School of Radiologic Technology typically accepts 8-10 rad tech interns per year. St Joseph interns will rotate through the following areas: interventional, CT, MRI, ultrasound, and nuclear medicine. Mammography and radiation therapy rotations are optional. Ascension St Joseph's Radiologic Technology program is accredited by the JRCERT. WLC is accredited by the HLC.

St Joseph's School of Radiography is led by Diane Wingenter (diane.wingenter@ascension.org). Interns from St. Joseph have achieved an 100% licensure pass rate and 100% employment rate in 2020 and 2021. One unique aspect of St. Joseph's internship program is that they only meet four days a week (Mon-Thurs 7:30-5:30PM). Each day consists of 2.5 hours classroom instruction and 6-7 hours of clinical experience. Classes typically begin the Tuesday after Labor Day and graduation is the second week of July of the second internship year. First year interns have 6 weeks of scheduled vacation and second year interns have three weeks.

Selection process for St. Joseph's Radiography program (a description may be found here).

1. Complete the application form, along with reference letters, transcripts and other required documentation (see below) to and Rob Balza (rob.balza@wlc.edu). Dr. Balza will submit the application materials to: Diane Wingenter; Program Director; St. Joseph, School of Radiologic Technology; 5000 West Chambers; M103; Milwaukee, WI 53210 or emailed to diane.wingenter@ascension.org. Application deadline is February 1.
2. It is strongly recommended that you submit an application to graduate with the WLC Registrar's office during the fall semester of your sophomore year. In this way, the registrar will review your academic transcript to be sure you are on track to graduate before your final semester at WLC.
3. OSHA training (hand hygiene, blood borne pathogens and tuberculosis) is required. If OSHA training has not already been documented through CNA or other employment you may be able to arrange OSHA training on campus by contacting Dr. Sheryl Scott (Sheryl.Scott@wlc.edu).
4. Official transcripts from all post-secondary colleges/universities that you attended.
5. Three professional references from instructors and/or employers. Provide them with this form.
6. $25 application fee.
7. A personal statement explaining interest in radiologic technology

8. Work experience
    a. CPR certification is required before starting the internship
    b. Job shadowing recommended.
    c. CNA experience is helpful. See Appendix XI for a list of CNA training programs in Wisconsin.
9. Completion of the following prerequisites GPAs over 3.0 preferred (See Appendix VII for sample academic program).
    a. College math (minimum 3 credits)
    b. Human Anatomy & Physiology I and II (8 credits)
    c. One written or oral communication course (minimum 3 credits)

Appendix VII. Sample Program for "2+2" Radiologic Technology program with St. Joseph's Hospital School of Radiography

Freshman Year, Semester 1 (WLC)	**Freshman Year, Semester 2 (WLC)**
MAT118 (or higher)[25]	BIO202 Principles of Biology 2
ENG101 Writing & Rhetoric	COM101 Intro to Communication
CHE161 General Chemistry 1	BIO223 or 323 Medical Terminology
CHE168 General Chemistry Lab 1	Gen Ed (Humanities)
PSY101 Introduction to Psychology	Gen Ed (COL201)
Gen Ed (COL101)	Gen Ed (Theology)
Gen Ed (Foreign language if needed)	Gen Ed (Foreign language if needed)
17-20[26] credits	17-20[27] credits

Sophomore Year, Semester 1 (WLC)	**Sophomore Year, Semester 2 (WLC)**
BIO225 Anatomy and Physiology I	BIO255 Anatomy and Physiology II
BIO355 Pathophysiology	ANT312 Human Osteology or BIO331 Cell Biology
Gen Ed (History)	Gen Ed (LAS401)
Gen Ed	Gen Ed
Gen Ed	Gen Ed (Theology)
Gen Ed	
16-17 credits	16-17 credits

Junior Year (All Saints Hospital or other clinical partner)		
Trimester 1	**Trimester 2**	**Trimester 3**
Intro Radiologic Science	Medical Terminology	Imaging Procedures III
Imaging Procedures I	Principles of Imaging II	Radiography Clinical III
Radiation Protection	Imaging Procedures II	
Principles of Imaging I	Seminar in Radiography I	
Radiography Clinical I		
14 credits	14 credits	7 credits

[25] Courses required by the WLC RDT major are highlighted in red. Other courses required by St. Joseph's School of Radiography are highlighted in orange.
[26] If two sequential units of foreign language are required, it may be advisable to complete one or more courses during J-term or Summer to avoid an overload during the semester.
[27] If two sequential units of foreign language are required, it may be advisable to complete one or more courses during J-term or Summer to avoid an overload during the semester.

Senior Year (All Saints Hospital or other clinical partner)		
Trimester 1	**Trimester 2**	**Trimester 3**
Imaging Procedures IV	Radiation Biology	Professional Development
Cross Sectional Anatomy	Radiographic Physics	Comprehensive Finals
Radiographic Physics I	Seminar in Radiography II	Radiography Clinical VI
Digital Imaging	Independent Study	Terminal Clinical Competency
Radiography Clinical Ed IV	Radiographic Pathology	
	Radiography Clinical Ed V	
13 credits	14 credits	6 credits

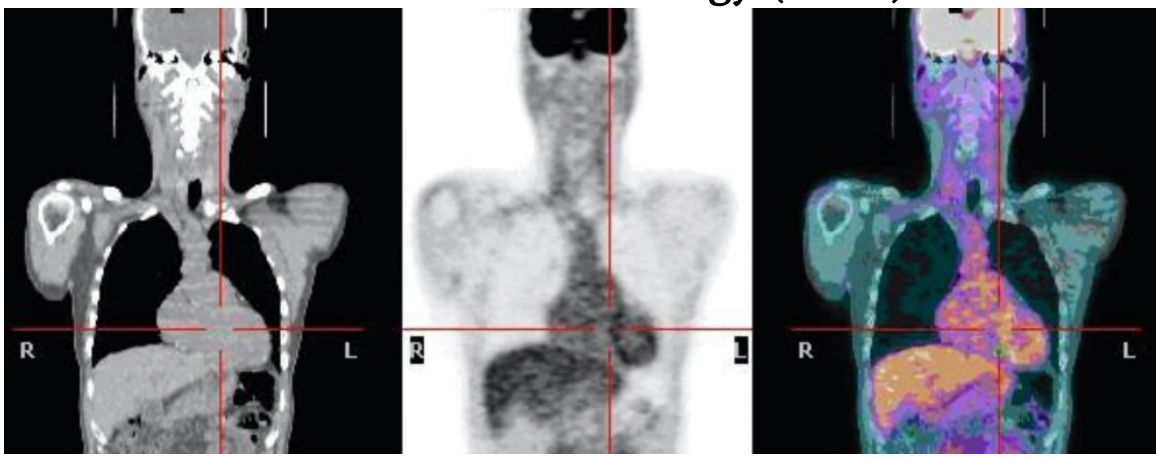
4. Ascension All Saints School of Radiologic Technology

Ascension All Saint's School of Radiologic Technology (located in Racine, WI) has partnered with WLC to provide clinical training in radiologic technology since 2019. All Saint's School of Radiologic Technology typically accepts 8 rad tech interns per year. Ascension All Saint's School of Radiologic Technology program is accredited by the JRCERT. WLC is accredited by the HLC. All Saints Hospital now requires confirmation of immunization records.

All Saint's School of Radiologic Technology is led by Ron Marker (ron.marker@ascension.org). Interns from St. Joseph have achieved an 96% licensure pass rate and 100% job placement rate. All Saints program typically meets MWF for classroom work 8:30-3:30PM and for clinical rotations TTh from 7:30-3:30PM. All Saints Hospital is unique in that the internship program begins in the summer rather than the fall.

Selection process for Ascension All Saint's Radiography program is similar to Ascension St Joseph above (details here). The application deadline if February 15.

III. Nuclear Medicine Technology (NMT)



Nuclear medical technologists (NMTs) work with patients to obtain *functional* images of internal organs and tissues in order to diagnose diseases in collaboration with physicians. Nuclear medicine differs from other medical imaging technologies such as X-ray, CAT, MRI and Ultrasound in that radioactive pharmaceuticals may be administered by NMTs to image organ function. For example, nuclear medicine technologists routinely inject radiopharmaceuticals into the vein of a patient that are taken up by specific organs (such as a kidney, heart, thyroid, etc) and emit radiation that can be imaged using gamma or PET scanners to show function of these organs. Alternatively, nuclear medicine technologists may administer oral medication to visualize digestion or administer inhaled particles to image the lungs. While NMTs should not be confused with medical professionals that administer radioactive drugs for therapeutic purposes (radiation therapists), however the scope of practice for NMTs is expanding to include pharmaceuticals that provide both diagnostic and therapeutic benefit. NMTs are also trained to administer CT scans in combination with PET in order to put the functional PET image in context of the more general CT. Children's Hospital of Wisconsin has recently installed PET/MRI for even more high resolution scans. Froedtert Hospital is one of the first in the Midwest to also offer theranostics (a powerful combination of radioactive drugs for simultaneous diagnosis of cancer spread and therapeutic treatment of tumors). For all of these reasons NMTs should be broadly trained to adapt to a rapidly changing scope of practice and must be effective communicators capable of working with patients from a wide range of ethnic, religious, and socioeconomic backgrounds.

The demand for NMTs is high. The U.S. Bureau of Labor Statistics projects a higher than average rate of job growth over the next ten years (10%) and a high median salary ($75,660/year in 2017)[28]. While salaries are highest for NMTs in metropolitan areas such as Milwaukee, rural areas of Wisconsin are among the top paying nonmetropolitan areas for this occupation.[29] There are currently 1,307 job advertisements posted on Indeed.com[30]. NMTs are employed as staff nuclear medicine technologists, research technologists, hospital administrators, radiation safety officers, education and in industry.

NMTs were historically trained at the associate's degree level, but NMTs are now commonly trained at the baccalaureate level. Some universities have recently launched masters-level nuclear medicine

[28] Bureau of Labor Statistics. Retrieved on September 12, 2018: https://www.bls.gov/ooh/healthcare/nuclear-medicine-technologists.htm#tab-1
[29] Bureau of Labor Statistics. Retrieved on September 12, 2018: https://www.bls.gov/oes/current/oes292033.htm#st
[30] Retrieved on September 12, 2018: https://www.indeed.com/jobs?q=nuclear+medicine+technologist&l=

technology programs[31]. Hospitals and clinics are now increasingly seeking NMTs with a bachelor's degree so that they are better prepared for the complexities of a rapidly changing health care system.

The requirements for the Nuclear Medicine Technology (NMT) major at WLC are available here. To declare a major in NMT, you will need to complete a major declaration form available here. Note that a minimum 2.25 cGPA in the major is required in order to declare your major. For academic or clinical advising questions contact Rob Balza, PhD (rob.balza@wlc.edu) for career counseling or clinical shadowing opportunities contact Douglas Wilary (douglas.wilary@wlc.edu). The Nuclear Medicine Technology major at WLC includes a one-year (July 1-June 30) clinical internship experience at our clinical affiliate: Froedtert Nuclear Medicine Technology program. The Nuclear Medicine Technology program has posted some brief "virtual shadowing" videos here and here for prospective interns. Students can also access a virtual tour of the Nuclear Medicine Department at Froedtert here.

Upon successful completion of at least three years of general education and basic science coursework at WLC and a successful one-year clinical internship, students will earn a Bachelor of Science degree in Nuclear Medicine Technology and the ability to sit for either the Nuclear Medicine Technology Certification Board (NMTCB) or the American Registry of Radiologic Technologists (ARRT) board exam prior to graduation. The NMTCB is the most important exam. Some students choose to take both board exams. The clinical internship program typically starts in August and ends in May of fourth year of college. Tuition and scholarships do not typically change during clinical internship training for students, the exception to this however is tuition-remission students (ie children of faculty/staff at WLC) will be asked to pay a minimum of $7,500 per year during their clinical internship training.

During their clinical internship, students majoring in allied health may choose to live off campus. If students wish to live on campus during their clinical internship, they may apply through the Director of Residence Life. Students who choose to live off-campus during their clinical internship are encouraged to continue participation in a wide range of campus events (attend athletic competitions, chapel services, guest lecture series, musical concerts, plays, and other social events). However, they will not be eligible to participate in intercollegiate sports or credit-bearing musical ensembles due to scheduling conflicts nor will they have access to on campus health services or IT support as they will no longer be charged student support or health fees.

Good resources to learn more about careers in Nuclear Medicine Technology include: the Society of Nuclear Medicine and Molecular Imagine (SNMMI).

1. Froedtert Hospital Nuclear Medicine Technology Program

Selection process for Froedtert's Nuclear Medicine Technology program (a description may be found here).

1. Complete the online application. Applications accepted between June 1 and December 31.
2. It is strongly recommended that you submit an application to graduate with the WLC Registrar's office during the fall semester of your sophomore year. In this way, the registrar will review your academic transcript to be sure you are on track to graduate before your final semester at WLC.
3. Request submission of official transcripts from all post-secondary colleges/universities that you attended.

[31] https://www.uab.edu/shp/cds/nuclear-medicine-technology

a. Must be received by December 31 of application year (it is your responsibility to be sure that your references remember to submit these on time)

4. Three professional references (provide this form to them).
    a. The references should be placed in a sealed envelope and mailed in the unopened envelope with the completed application packet.
5. Completion of the following prerequisites with a minimum of "C" or better (See Appendix VIII for sample academic program). *Froedtert's NMT program will accept any courses that WLC accepts in transfer as long as they are associated with a letter grade.*[32]
    a. Chemistry (with laboratory)
    b. College algebra (MAT118 or calculus)
    c. Statistics (MAT117)
    d. General Physics (PHY151, PHY152 or PHY203) Note: of these three physics options, PHY203 is highly recommended since it contains the most information about radioactive decay and atomic theory. This course does have a calculus prerequisite, but Dr. Kuehn is willing to accommodate NMT students who discuss this with him before registration. The next scheduled offering of PHY203 is Spring 2025.
    e. Radiation Biology (NMT101)
    f. Human Anatomy and Physiology (BIO225 and BIO255)
    g. Cross Sectional Anatomy (BIO235)
    h. Medical Terminology (BIO323)
    i. Oral communication (COM101)
    j. Written communication (ENG101)
    k. Additional highly recommended courses:
        i. Medical Ethics
        ii. Nuclear Chemistry
        iii. Organic Chemistry or Biochemistry
        iv. Quantitative Analysis
6. Work experience
    a. Health care work experience (CNA, medical scribe, etc) is a plus. See Appendix XI for a list of CNA training programs in Wisconsin.
    b. At least 8 hours of job shadowing is required. Froedtert is accepting job shadow applications now (see Appendix X below for documentation). You can apply for shadowing opportunities here. Contact Ann Voslar (ann.voslar@froedtert.com or Doug Wilary (douglas.wilary@wlc.edu) if you need assistance setting up a shadowing opportunity. It may be possible to volunteer in nuclear medicine as well. You can also set up job shadowing at other hospitals (see Appendix IX for a documentation sheet for this).
7. Interview
    a. All applicants will be invited to attend a mandatory information session before interviewing
    b. (typically scheduled in January and February). This is a combination of group and individual interviews used to rate professional appearance, personality, communication, initiative/motivation and critical thinking. Be prepared to explain why you are a good fit for the program.

Appendix VIII. Sample Program for "3+1" Nuclear Medicine Technology program with Froedtert

Freshman

[32] Personal communication with Ann Voslar, September 6, 2022.

Fall			Spring		
Course		Credits	Course		Credits
CHE161	General Chemistry 1	4	CHE162	General Chemistry 2	4
CHE168	General Chemistry Lab 1	1	CHE169	General Chemistry Lab 2	1
MAT118	College Algebra (or calculus)	3	BIO201	Principles of Biology 1	4
XXX	Gen Ed (ENG101 - writing)	3	NMT490	Job shadowing / internship[33]	1
XXX	Gen Ed	1	MAT117	Statistics	3
XXX	Gen Ed	3	XXX	Gen Ed (COM101 - speaking)	3
			XXX	Gen Ed (LAS101)	1
		16			17
Sophomore					
Fall			Spring		
BIO202	Principles of Biology 2	4	PHY151 or 203	General Physics 1 (or Intro to Modern Physics: Heat, Atoms and Quanta)[34]	3
BIO225	Anatomy & Physiology 1	4	BIO255	Anatomy & Physiology 2	4
CHE221	Organic Chemistry 1	3	BIO223 or 323	Medical Terminology	2
XXX	Gen Ed	3	XXX	Gen Ed	3
XXX	Gen Ed	3	XXX	Elective	3
		17			15
Junior					
Fall			Spring		
BIO355 or 354	Immunology or Pathophysiology	3	BIO235	Sectional Anatomy	2
XXX	Gen Ed	3	BIO331	Cell Biology	4
XXX	Gen Ed	3	NMT101	Foundations of Radiation Science[35]	3
XXX	Gen Ed	3	XXX	Gen Ed	3
XXX	Gen Ed	1	XXX	Gen Ed (LAS401)	2
		16			14

Courses required the School of Nuclear Medicine Technology Major are highlighted in red. This assumes at least 30 credits from an affiliate School of Nuclear Medicine Technology to fulfill the requirements for a Bachelor of Science degree (128 total credits) at WLC.

Typical courses from Froedtert's NMT program	
First Semester	**17 total**
Management & Methods of Patient Care	2
Anatomy, Physiology and Pathology	4
Radiation Protection	2
Clinical Nuclear Practicum I	4
Nuclear Radiation Physics and Instrumentation	3
Multimodality Imaging	2
Second Semester	**17 total**
Clinical Nuclear Practicum II	8
Nuclear Medicine Quality Control Practicum	2
Nuclear Medicine Chemistry	4
Application of Computers to Nuclear Medicine	1
Independent Study	2

[33] NMT Job shadowing may be arranged at Froedtert through this website: https://www.froedtert.com/health-care-professionals/education/job-shadow-observer

[34] Previous interns have noted that PHY203 is the most useful option for physics.

[35] To ensure that at least 8 students are enrolled in this course it may be offered every-other year, so that both Freshman and Sophomore Nuclear Medicine Technology Students will take the course together.

Appendix IX. Documentation form for clinical shadowing in Nuclear Medicine Technology

Nuclear Medicine / PET Technology Program

Job Shadowing / Rotation documentation form

Student or Interns name Date

Technologist: Please complete the form below regarding the student/intern during his/her time in your department.

	Excellent	Very Good	Average	Below Avg.	Poor
Level of interest	5. _____	4. _____	3. _____	2. _____	1. _____
Questions asked	5. _____	4. _____	3. _____	2. _____	1. _____
Maturity	5. _____	4. _____	3. _____	2. _____	1. _____
Use of time	5. _____	4. _____	3. _____	2. _____	1. _____
Communication with staff	5. _____	4. _____	3. _____	2. _____	1. _____
Communication with Patients	5. _____	4. _____	3. _____	2. _____	1. _____
Knowledge	5. _____	4. _____	3. _____	2. _____	1. _____

Additional comments:

Technologist's name Signature Date

Student or Intern's name Signature Date

Appendix XI. List of Wisconsin-based Certified Nurse Assistant (CNA) programs.

Certified nurse assistants (CNAs) provide general care for patients in nursing homes, hospitals and assisted living facilities. Many medical school admission committees value experience as a CNA as this job provides experience with direct patient contact. Securing a job as a CNA requires a licensure course through a brief training program. The state of Wisconsin Department of Health Services maintains of list of approved CNA programs here. Here are some programs that are within driving distance of WLC:
The state of Wisconsin Department of Health Services maintains of list of approved CNA programs here. Here are some programs that are within driving distance of WLC:

Advocate Aurora Healthcare 3033 S 27th St. Ste 105, Milwaukee WI 414-649-1270 $600
Alliance Specialty Healthcare Services 4911 W Good Hope Rd Suite 102 Milwaukee, WI 800-387-5520 ?
Gateway Technical College 3520 30th Ave, Kenosha, WI 262-564-2720 $358
Linden Grove W180N8071 Town Hall Rd, Menomonee Falls, WI 262-797-4600 $750
Medical Assets of Wisconsin W239N3490 Pewaukee Rd 414-256-3680 $1,200
Milwaukee Area Technical College 700 W State St. Milwaukee, WI 414-297-MATC $368
Quality Healthcare Options 7425 Harwood Ave Wauwatosa, WI 414-475-7337 $1,045
Waukesha County Technical College 800 Main St. Pewaukee, WI 262-691-5046 $360

Appendix XII. Clinical experience opportunities in the Milwaukee area.

Clinical volunteer service:

The Director of Volunteer Services at **Froedtert/MCW** is Barbara Albiniak. You can contact her at 414-805-5011 or barbara.albiniak@froedtert.com to arrange volunteer opportunities.

The volunteer program coordinator at **Holistic Home Care and Hospice** is Justin Howell. You can contact him at 414-231-3130 or justin.howell@hosistichh.com to arrange volunteer opportunities. Holistic Home Care and Hospice is located at 877W Forest Home Ave in Greenfield,

WI 53228. They are seeking the following (among others): vigil volunteers, helping hand volunteers, administrative and office volunteers, bereavement volunteers, pet friend volunteers, art and music volunteers, pampering and self esteem, and community outreach volunteers.

Medical Scribe:
A part-time position as a medical scribe is a popular way for pre-med students to obtain clinical experience while earning money in college. Medical scribes record notes on patient charts under the direct supervision of a physician, physician assistant or nurse practitioner. To be competitive for these positions, college coursework in Anatomy, Physiology and Medical Terminology is important. Here are a few local medical scribe companies where WLC premed students have found employment:

Scribe America

Here is an interest form for more information.

Talent Acquisition Manager Erin Boatman (erin.ussery@scribeamerica.com)

Elite Medical Scribes

Recruiter Jes Andhelescu (Jessicaa@EliteMedicalScribes.com)

Emergency Medical Technician
Emergency medical technicians (EMTs) respond to emergency calls and transport patients to medical facilities. This job typically requires a training course such as this one provided by MATC.

Other allied health, patient support and medical assistant positions:
Many local hospitals such as Froedtert, Children's Hospital of Wisconsin, Ascension and Aurora are always looking to find part-time employees to serve as phlebotomy specialists, health unit coordinators, sterile processing techs, medical assistants, medical laboratory techs, patient transporters, neurodiagnostic techs, etc. Premier Eyes is an optometry clinic that has hired WLC students to staff their front desk, but with some experience students have been allowed to also assist in the exam room to work up patients with the doctor.

Appendix XIII. Possible "off-ramp" majors. BIO and ANT