

Imaging Technology

*Diagnostic Medical Sonographer, Dosimetrist, Nuclear Medicine Technologist,
Radiation Therapist, Radiologic Technologist*



Diagnostic Medical Sonographer, Dosimetrist

Diagnostic Medical Sonographer

JOB DESCRIPTION

Diagnostic medical sonographers use high frequency sound waves (ultrasound) to create dynamic cross-sectional images of body tissues and blood flow. The information sonographers obtain is used by physicians to diagnose disease, injury, and other physical conditions. Sonographers talk with patients to record patient history, explain the procedure, and share non-diagnostic information about sonography and the images. Sonographers may assist with invasive biopsies or treatments which use ultrasound images for guidance into the body. Sonographers may work primarily with one type of patient or in one body area. In each specialty area in which they work, sonographers must know normal anatomy and variations, common pathology and symptoms, and must recognize and produce representative images.

AREAS OF SPECIALIZATION

Echocardiographers – specialize in examining the heart and cardiac blood flow patterns.

Obstetrical/Gynecological Sonographers – specialize in examining a pregnant mother and fetus and reproductive organs in women throughout the life cycle.

Vascular Technologists – specialize in examining blood vessels, blood flow, and organ perfusion throughout the body.

Abdominal Sonographers – specialize in examining abdominal organs such as the liver, kidney, spleen, and pancreas.

There are other sonography specialty areas that support physician practices in urology, infertility, pediatric cardiology, neonatal care, breast diagnosis, musculoskeletal injury, vascular screening and surgery.

WORK ENVIRONMENT

Most diagnostic medical sonographers are employed in hospital departments such as radiology, cardiology, obstetrics, and vascular surgery. Sonographers may also work in locations such as diagnostic imaging centers, physicians' offices, health maintenance organizations (HMOs), emergency settings, general medical clinics and specialty settings. Most sonographers work in a full-time position and hours may include evening, weekend or on-call shifts.

ANNUAL WAGES

National\$49,962
 New York State\$51,168

National and New York State median annual earnings for 2003. U.S. Department of Labor, Bureau of Labor Statistics.

ACADEMIC REQUIREMENTS

Sonography education can take one, two, or four years, depending on the individual's background, the degree or diploma desired, and the number of sonography specialties taught. Individuals with no prior training may complete a two-year program leading to the associate's degree. Students entering sonography from another health career or baccalaureate background may qualify for certification after programs of one-year in length. Baccalaureate programs in diagnostic sonography are often associated with allied health or radiologic technology programs. Graduates of accredited programs are eligible to apply to the American Registry of Diagnostic Medical Sonographers for examination and certification.

PROFESSIONAL ORGANIZATIONS

American Institute of Ultrasound in Medicine
 American Society of Echocardiography
 Society for Vascular Ultrasound
 Society of Diagnostic Medical Sonographers

For professional organization address and phone information see Appendix B.

EDUCATIONAL INSTITUTIONS

For a listing of educational programs in New York State for Imaging Technology see page 32.

Dosimetrist

JOB DESCRIPTION

The medical dosimetrist is a member of the radiation oncology team who has knowledge of the overall characteristics and clinical relevance of radiation oncology treatment machines and equipment, is cognizant of procedures commonly used in brachytherapy (the procedure of placing radioactive material sealed in needles, seeds, wires, or catheters directly into or near a tumor), and has the education and expertise necessary to generate radiation dose distributions and dose calculations in collaboration with the medical physicist and radiation oncologist.

WORK ENVIRONMENT

Dosimetrists work in hospitals, cancer treatment centers, colleges, and medical research laboratories. The workweek should be a standard 40-hour week, though weekend and evening shifts may arise.

ANNUAL WAGES

National\$80,000

2004 Salary Survey. The American Association of Medical Dosimetrists.

ACADEMIC REQUIREMENTS

Certification is available for current radiation therapy technologists or for individuals with a bachelor's degree in science and a medical background. Upon

completion of an accredited program, the individual may take an exam offered by the Medical Dosimetrist Certification Board to become a certified medical dosimetrist. Continuing education hours are required in order to maintain certification.

PROFESSIONAL ORGANIZATIONS

American Association of Medical Dosimetrists
 Medical Dosimetrist Certification Board

For professional organization address and phone information see Appendix B.

EDUCATIONAL INSTITUTIONS

For a listing of educational programs in New York State for Imaging Technology see page 32.

Nuclear Medicine Technologist, Radiation Therapist

Nuclear Medicine Technologist

JOB DESCRIPTION

Nuclear medicine technologists, under a physician's supervision, use small amounts of radiopharmaceuticals to diagnose and treat disease. Radiopharmaceuticals, introduced into the body via injection, inhalation, or ingestion, aid in the diagnostic imaging of such organs as the heart, lungs, liver, kidneys and brain. These radioactive tracers are useful because they are attracted by certain internal organs and emit easily detectable high-energy rays. Using sensitive instrumentation, the technologist can obtain a useful image of the structure and function of the specific organ in question. Technologists are also concerned with the safe storage and disposal of these radioactive materials. They may prepare and administer the materials, operate medical imaging equipment, position patients for diagnostic procedures, and prepare information received from the tests for the doctor's interpretation. Technologists must monitor radiation levels at all times to ensure the safety of their patient and themselves.

WORK ENVIRONMENT

Nuclear medicine technologists work under the direction of physicians in hospitals, diagnostic centers, research facilities, and educational institutions, under standards set by the Nuclear Regulatory Commission. Due to the nature of the work and close proximity to radiation, exposure is kept to a minimum by the use of shielded clothing, gloves and other protective devices. A 40-hour workweek is standard for nuclear medicine technologists. Part-time shifts may also be available, with weekend and evening hours possible.

ANNUAL WAGES

National	\$51,563
New York State	\$52,499

National and New York State median annual earnings for 2003. U.S. Department of Labor, Bureau of Labor Statistics.

ACADEMIC REQUIREMENTS

A high school diploma or equivalent is required for entry into a program. Formal training is offered through hospitals, colleges, universities and vocational/technical schools. Individuals can enroll in programs that last from one to four years, and receive a certificate,

associate's degree or bachelor's degree. Individuals with prior experience in the health field, such as radiographers, may enroll in the one-year programs. Upon completion of an accredited program, graduates must pass an examination and meet other requirements before becoming registered by the American Registry of Radiologic Technologists or the Nuclear Medicine Technology Certification Board. Continuing education is required to remain registered and to stay up-to-date in the field.

PROFESSIONAL ORGANIZATIONS

- American Society of Radiologic Technologists
- Nuclear Medicine Technology Certification Board
- Society of Nuclear Medicine

For professional organization address and phone information see Appendix B.

EDUCATIONAL INSTITUTIONS

For a listing of educational programs in New York State for Imaging Technology see page 32.

Radiation Therapist

JOB DESCRIPTION

Radiation therapists deliver targeted doses of radiation to treat patients with cancer and other diseases. By delivering radiation in the form of high-energy X-rays, gamma rays, or electron beams to specific body parts, the radiation therapist attempts to halt the spread of disease or offer relief from symptoms. Radiation therapists also give support and information to the patient and work closely with oncologists to weigh treatment options and monitor patient progress. Cancer patients and their families often develop a meaningful relationship with these health-care providers over the course of their treatment.

WORK ENVIRONMENT

While most radiation therapists are employed in hospitals, many others work in clinics and research

facilities. Forty-hour workweeks are common among these technologists.

ANNUAL WAGES

National	\$54,205
New York State	\$63,710

National and New York State median annual earnings for 2003. U.S. Department of Labor, Bureau of Labor Statistics.

ACADEMIC REQUIREMENTS

Training usually takes one to two years depending on previous education, experience, or degree. Applicants applying to one-year programs must have graduated from an accredited program in radiologic technology or a related allied health field. Two-year programs require a high school diploma, or equivalent, with an educational background in science and mathematics. Individuals earning their bachelor's degree may go through a "2+2" program, meaning two years of

preparatory college courses and two years of professional courses in radiologic science. To become licensed as a radiation therapist in New York State, individuals must pass a certification examination offered by the American Registry of Radiologic Technologists and file an application with the New York State Department of Health, Bureau of Environmental Radiation Protection.

PROFESSIONAL ORGANIZATIONS

- American Society for Therapeutic Radiology and Oncology
- American Society of Radiologic Technologists

For professional organization address and phone information see Appendix B.

EDUCATIONAL INSTITUTIONS

For a listing of educational programs in New York State for Imaging Technology see page 32.

Radiologic Technologist

Radiologic Technologist

JOB DESCRIPTION

Radiologic technologists, sometimes known as radiographers, X-ray technologists, or imaging technologists, are responsible for producing images of the tissues, organs, bones, and vessels of the human body by operating medical imaging equipment. These images are viewed by a radiologist and/or physician to assist in the detection and diagnosis of disease and injury. All radiologic technologists work under the direct supervision of a physician.

AREAS OF SPECIALIZATION

Radiographers – most commonly produce X-rays of the body and are responsible for preparing patients for the procedure and developing the film for analysis by a physician. More experienced radiographers may perform fluoroscopy, which enhances soft-tissue imaging.

CT Technologists – use computed tomography, a special type of x-ray equipment, to view patients cross-sectionally.

Magnetic Resonance Imaging (MRI) Technologists – are also radiographers, but they use radiowaves, a magnetic field, and computers instead of radiation to create images.

Radiation Therapy Technologists – deliver targeted doses of radiation to patients for treatment of disease such as cancer.

Ultrasound Technologists/Sonographers – use ultrasound equipment to produce recordings of functions of the body to study, view, and aid in the diagnosis of diseases or disorders.

WORK ENVIRONMENT

Hospitals employ the largest number of radiologic technologists. Other sites that employ radiologic technologists include physicians' offices, diagnostic imaging centers, and clinics. Most radiologic technologists work full-time; part-time workers often are needed for some evening, weekend, or on-call hours.

ANNUAL WAGES

National	\$40,622
New York State	\$46,842

National and New York State median annual earnings for 2003. U.S. Department of Labor, Bureau of Labor Statistics.

ACADEMIC REQUIREMENTS

A high school diploma or equivalent is required for entry into a radiography program. Formal training is offered through hospitals, colleges, universities, vocational/technical institutes and the military. While two-year programs are most common, students can enroll in programs that last from one to four

years, and receive a certificate, associate's degree or bachelor's degree. Individuals with prior experience in the health field usually enroll in the one-year programs. To become licensed as a radiologic technologist in New York State, individuals must complete a two-year program for radiologic technology, pass a certification examination offered by the American Registry of Radiologic Technologists, and file an application with the New York State Department of Health, Bureau of Environmental Radiation Protection.

PROFESSIONAL ORGANIZATIONS

- American Registry of Diagnostic Medical Sonographers
- American Registry of Radiologic Technologists
- American Society of Radiologic Technologists
- Society of Diagnostic Medical Sonographers

For professional organization address and phone information see Appendix B.

EDUCATIONAL INSTITUTIONS

For a listing of educational programs in New York State for Imaging Technology see page 32.

*New York State Educational Institutions***NEW YORK STATE EDUCATIONAL INSTITUTIONS WITH PROGRAMS IN IMAGING TECHNOLOGY***(For New York State educational institution address and phone information, see Appendix A.)*

Arnot-Ogden Medical Center School of Radiologic Technology	New York United Hospital School of Radiologic Technology
Bellevue Hospital Center School of Radiologic Technology	New York University
Broome Community College	Niagara County Community College
City University of New York Bronx Community College	North Country Community College
City University of New York Hostos Community College	Orange County Community College
City University of New York New York City Technical College	Robert J Hochstim School of Radiography-South
CYPH Medical Center School of Radiologic Technology	Nassau Community Hospital
Erie Community College-City Campus	Saint Elizabeth Medical Center School of Radiography
Faxton-St Luke's Healthcare School of Radiologic Technology	Saint James Mercy Hospital School of Radiography
Hudson Valley Community College	St. Elizabeth Hospital School of Radiology
Long Island College Hospital School of Radiology	St. Francis College
Long Island University-Brooklyn Campus	State University of New York at Buffalo
Long Island University-C W Post Campus	State University of New York at Stony Brook
Manhattan College	State University of New York Health Science Center at Brooklyn
Memorial Hospital School of Radiation Therapy Technology	State University of New York Health Science Center at Syracuse
Mercy Medical Center-School of Radiography	State University of New York Westchester Community College
Mohawk Valley Community College-Utica Branch	Trocaire College
Molloy College	Ultrasound Diagnostic School
Monroe Community College	Veterans Administration Hospital School of Radiologic Technology
Montefiore Medical Center-School of Radiologic Therapy	Western Suffolk BOCES
Nassau Community College	Winthrop University Hospital Program of Radiology

Source: U.S. Department of Education – Integrated Postsecondary Education Data System (www.nces.ed.gov/ipeds/) and the New York State Area Health Education Center System Data Resource Center, September 2003.