

RADIOLOGIC SCIENCES

Radiographers, also known as radiologic technologists, perform diagnostic imaging examinations, accurately position patients, ensure quality diagnostic images are produced, follow physicians' orders precisely, and adhere to radiation protection regulations for themselves, their patients and co-workers. They work closely with radiologists, the physicians who interpret medical images, to diagnose or rule out disease or injury.

Background Information

Radiographers are educated in anatomy, patient positioning, examination techniques, equipment protocols, radiation safety, radiation protection and basic patient care. To become a registered technologist in radiography, RT(R), students must complete an accredited program, earn an academic degree and pass a national certification examination. To remain registered, they must earn continuing education credits. For more information about certification and registration, please visit www.artt.org.

Career Opportunities

Most radiographers or radiologic technologists work in hospitals, physicians' offices and clinics, and diagnostic imaging centers. Multi-skilled RT(R)s who are educated and credentialed in more than one type of imaging technique are the most marketable. With experience and additional education, radiographers may become specialists in CT, mammography, magnetic resonance imaging, angiography and quality management. Typically, nuclear medicine, radiation therapy and sonography require additional specialized education in a dedicated training program.

According to the U.S. Department of Labor Bureau of Labor Statistics, employment of radiologic technologists is expected to grow faster than average for all occupations through 2022. Mean annual earnings for radiographers is \$56,760 (www.bls.gov; National Occupational Employment and Wage Estimates, May 2013).

The Program

A Bachelor of Science degree with a major in radiologic sciences from North Dakota State University includes two or more years of rigorous academic course work on campus and a two year full-time internship in an affiliated hospital-based radiography program. Transfer students need to successfully complete a minimum of 20 resident credits at NDSU prior to starting an internship. A strong science and math aptitude is important for radiologic science majors to possess, since academic course work includes chemistry, physics, human anatomy and physiology, trigonometry, microbiology and computer science. In addition, each student is required to complete a minimum of 12 credits in 300-400 level special elective courses on campus. Upon satisfactory completion of the educational and clinical experience, NDSU awards a degree and graduates are eligible to take the national certification examination.

Internship Admission

Students who have completed the pre-requisite courses and meet the grade point average (GPA) requirement established by the hospital affiliates may be eligible to apply for an internship. Internship admission is competitive and based upon completion of

required courses, academic achievement, references, related experience and an interview. In addition, students must comply with criminal background and student conduct requirements.

The two year full-time internship consists of classroom and clinical instruction in patient care procedures, radiation physics and protection, principles of imaging, positioning, radiobiology and pathology. In addition to routine diagnostic imaging, education may also be provided in mammography, CT and MRI. To assist students, NDSU maintains affiliation with radiologic technology programs in the following hospitals: Sanford Medical Centers (Bismarck and Fargo, ND, Sioux Falls, SD), St. Cloud Hospital (St. Cloud, MN), Avera McKennan Hospital (Sioux Falls, SD), Rapid City Regional Hospital (Rapid City, SD), Unity Point Health (Des Moines, IA), Mercy/St. Luke's Hospitals (Cedar Rapids, IA), St. Luke's College (Sioux City, IA) and the Veterans Affairs Medical Center (Minneapolis, MN). Affiliated programs are accredited by the Joint Review Committee for Education in Radiologic Technology.

It is highly recommended that students interested in this major meet with an advisor for more information about internship sites and admission criteria at least one year prior to their anticipated internship application. Application occurs annually in the fall.

For Further Information

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Sample Curriculum

General Education Requirements Credits

First Year Experience	
UNIV 189 - Skills for Academic Success.....	1
Communication	
COMM 110 - Fund of Public Speaking.....	3
ENGL 110, 120 - College Composition I, II.....	3, 3
English Upper Level Writing Course.....	3
Quantitative Reasoning	
STAT 330 - Introductory to Statistics.....	3
Science & Technology	
BIOL 220, 220L - Human Anatomy and	
Physiology I and Lab.....	3, 1
CSCI 114 - Microcomputer Packages <i>or</i>	
CSCI 116 - Business Use of Computers.....	3 <i>or</i> 4
MICR 202, 202L - Introduction to Microbiology	
and Lab.....	2, 1
Humanities & Fine Arts.....	6
Social & Behavioral Sciences	
PSYC 111 - Introduction to Psychology.....	3
Social and Behavioral Sciences Elective.....	3
Wellness.....	2
Cultural Diversity.....	-
Global Perspective.....	-
Total	40

Major Requirements Credits

BIOL 221, 221L - Human Anatomy and	
Physiology II and Lab.....	3, 1
CHEM 117, 117L - Chemistry Concepts and	
Applications and Lab.....	3, 1
CHEM 260 - Elements of Biochemistry <i>or</i>	
BIOC 460 - Foundations of Biochemistry & Molecular	
Biology I.....	4
MATH 105 - Trigonometry or higher.....	3
PHRM 125 - Medical Terminology for	
Health Professionals.....	1
PHRM 170 - Common Medicines/Diseases <i>or</i>	
PHRM 300 - Principles of Clinic Pharmacology.....	2 <i>or</i> 3
PHYS 211, 211L - College Physics I and Lab.....	3, 1
PHYS 212, 212L - College Physics II and Lab.....	3, 1
RS 111 - Introduction to Radiologic Science.....	1
RS 496 - Internship.....	60
Special Electives.....	12
Total	99-100

CURRICULUM TOTAL..... 141

This sample curriculum is not intended to serve as a curriculum guide for current students, but rather an example of course offerings for prospective students. For the curriculum requirements in effect at the time of entrance into a program, consult with an academic advisor or with the Office of Registration and Records.

Special Electives

Twelve credits of special elective courses are required within the radiologic science curriculum. Special electives are 300-400 level courses that 1) further a student's professional development by expanding upon subject matter included in the professional curriculum, and/or 2) address subject matter not included in the professional curriculum but relevant to the health care profession. Preapproved special elective courses can be found on the radiologic sciences curriculum guide. Students should consult with a radiologic sciences advisor for assistance in choosing special electives related to one's interests that also fulfill required communication, sociology and other categories.