

# RADIOLOGIC SCIENCE MAJOR, B.S.

## Introduction

The School of Medicine's radiologic science program is designed to prepare individuals for professional practice and associated responsibilities in the health specialty of medical imaging. Graduates provide patient assessment and care required for medical imaging procedures in addition to insuring that the highest quality imaging study is completed when the patient's radiation dose is a factor. Students may pursue diagnostic and interventional radiology or diagnostic medical sonography. In the senior year students may select other imaging modalities and practice areas for additional competence and training. These other areas may include sonography special areas, pediatrics, mammography, computed tomography, magnetic resonance imaging, vascular interventional radiology, and cardiac catheterization laboratory. The curriculum includes course discussions and projects on global health imaging issues and the potential for international experiences in medical imaging departments and programs abroad.

## Admission to the Program

Following completion of the first two years' work in the University's General College, students may be admitted to the professional major offered by the Department of Health Sciences of the UNC School of Medicine. Students enrolled at other colleges and universities who are interested in transferring to the Chapel Hill campus following their sophomore year should contact the Office of Undergraduate Admissions and the Department of Health Sciences early in their college career to assure proper planning and transferability of courses. Students are encouraged to begin the application process early in the fall semester preceding the year of intended enrollment. The program begins in Summer Session II each year. Transfer applications should be received in the Office of Undergraduate Admissions by the designated University deadline.

Since enrollment in the major is limited, completion of the student's course of study in the General College does not guarantee a position in the professional class. Students should contact the Department of Health Sciences in the fall semester preceding anticipated enrollment to receive admissions information. Student selections are made on a competitive basis with consideration given to academic achievement, character, both written and oral communication skills, and demonstrated interest in medical imaging as a professional career.

Students are subject to the requirements in place when they are admitted to this program; consequently, the requirements described in this catalog particularly apply to students admitted during the 2024–2025 academic year.

## Advising

First-year and sophomore students interested in the B.S. degree with a major in radiologic science have a primary academic advisor assigned in ConnectCarolina during the first two years of the degree program. Students are strongly encouraged to meet regularly with their advisor and review their progress toward the degree each semester. The director of Radiologic Science is available to meet with current and prospective majors by appointment (see contact information above). The department's faculty provides academic advising for students who are enrolled in the program. Further information on the curriculum may be

obtained from radiologic science website (<http://www.med.unc.edu/ahs/radisci/>).

## Facilities

The program has a laboratory with digital imaging capabilities and sonography capabilities in the Burnett-Womack Building adjacent to the offices and classroom building. The laboratory includes radiography and fluoroscopic equipment with digital imaging plate readers and software and sonography equipment similar to the environment the students see during their clinical rotations.

## Graduate School and Career Opportunities

The Division of Radiologic Science bachelor of science degree program provides a basis for further study. Additional clinical specializations are available in nuclear medicine, and radiation therapy. Graduates may elect graduate studies in health physics, business and education, management, public health, and other health professions. The division offers a master's in radiologic science degree program for those students seeking advanced clinical practice as a radiologist assistant.

The clinical practice of medical imaging (radiologic technology) may include one or more of the specialty areas listed here, depending on professional preference and the type, size, and mission of the health facility where the technologist is employed: general radiography (such as orthopedics or pediatrics), vascular imaging, cardiac catheterization, computed tomography, and magnetic resonance imaging or diagnostic medical sonography. Responsibilities and salaries vary according to the area and scope of practice.

Employment opportunities available in a variety of settings, in both rural and urban areas, include

1. more generalized practice in medium to small hospitals;
2. specialized clinical practice in a large hospital;
3. clinics and free-standing imaging centers, which may offer both special and general practice opportunities; or
4. clinical practice coupled with expanded responsibilities in quality control, service education, and supervision, particularly in a large hospital.

## Program Goals

- Develop competent, effective, medical imaging professionals
- Support development of skills necessary to practice in diverse healthcare environments and to acquire prominent roles in radiologic science
- Program curriculum, teaching methods, and philosophy promote development of integrative, critical thinking, and communication skills to include written, oral, and electronic discourse
- Graduates successfully pursue scholarly activities such as contributions to the profession and post-baccalaureate education
- Encourage global awareness of cultural and health care perspectives

## Student Learning Outcomes

### Diagnostic and Interventional Radiology

Upon completion of the radiological sciences (B.S.) program, students should be able to complete the following goals and outcomes.

**(Goal one)** Obtain a level of clinical competence appropriate for an entry-level medical imaging professional.

Outcomes:

- Students will demonstrate accurate patient positioning techniques.
- Students will utilize radiographic exposure factors to optimize image quality and minimize patient dose.
- Students will practice radiation protection principles for patient and occupational safety.

**(Goal two)** Possess critical thinking skills to adapt to changing clinical environments and patient needs.

Outcomes:

- Students will adapt procedures based on patient needs and clinical situation limitations.
- Students will analyze images to assure diagnostic quality.

**(Goal three)** Exhibit professionalism through consistent, responsible, and ethical behavior.

Outcomes:

- Students will provide nondiscriminatory care for all patients.
- Students will demonstrate adherence to program policies and procedures.

**(Goal four)** Demonstrate effective communication skills.

Outcomes:

- Students will practice effective oral communication skills in the classroom and in the clinical setting.
- Students will demonstrate effective written communication skills.

#### Diagnostic Medical Sonography Program Learning Outcomes

##### Program Learning Outcomes Abdomen Concentration

Students progress through the abdomen curriculum and meet course learning objectives that culminate in the accomplishment of the program outcomes below:

1. Obtain a level of competence as an entry level general sonographer in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains.
2. Possess critical thinking skills to adapt to changing clinical environments and patient needs, demonstrating knowledge and understanding of abdominal and superficial anatomy, physiology, and pathology.
3. Exhibit professionalism through consistent, responsible, and ethical behavior.
4. Demonstrate knowledge of understanding of acoustic physics, Doppler ultrasound principles, and ultrasound instrumentation to create diagnostic ultrasound images of abdominal and superficial anatomy.
5. Demonstrate effective communication skills.

##### Program Learning Outcomes Obstetrical and Gynecological Concentration

Students progress through the obstetrical and gynecological curriculum and meet course learning objectives that culminate in the accomplishment of the program outcomes below:

1. Obtain a level of competence as an entry level obstetrical and gynecological sonographer in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains.
2. Possess critical thinking skills to adapt to changing clinical environments and patient needs, demonstrating knowledge, and understanding of obstetrical and gynecological anatomy, physiology, and pathology.
3. Exhibit professionalism through consistent, responsible, and ethical behavior.
4. Demonstrate knowledge of understanding of acoustic physics, Doppler ultrasound principles, and ultrasound instrumentation to create diagnostic ultrasound images of obstetrical and gynecological anatomy.
5. Demonstrate effective communication skills








## Requirements




In addition to the program requirements, students must

- earn a minimum final cumulative GPA of 2.000
- complete a minimum of 45 academic credit hours earned from UNC–Chapel Hill courses
- take at least half of their major core requirements (courses and credit hours) at UNC–Chapel Hill
- earn a minimum cumulative GPA of 2.000 in the major core requirements. Some programs may require higher standards for major or specific courses.

For more information, please consult the degree requirements section of the catalog (<https://catalog.unc.edu/undergraduate/degree-requirements/>).

The schedule of academic work for radiologic science (medical imaging) majors includes the following General Education requirements. Students must complete all First-Year Foundation requirements, all Reflection & Integration requirements, and complete at least six Focus Capacity requirements as part of the IDEAs in Action General Education curriculum. In addition, the following specific requirements apply to students in the General College:


Code	Title	Hours
<b>Quantitative reasoning requirement:</b>		
MATH 130	 Precalculus Mathematics <sup>F</sup>	3-4
or MATH 231	 Calculus of Functions of One Variable I	
<b>Six courses in the physical and life sciences</b>		
BIOL 101 & 101L	 Principles of Biology and  Introductory Biology Laboratory <sup>H, F</sup>	4
BIOL 252 & 252L	 Fundamentals of Human Anatomy and Physiology and Fundamentals of Human Anatomy and Physiology Laboratory <sup>H</sup>	4
CHEM 101 & 101L	 General Descriptive Chemistry I and  Quantitative Chemistry Laboratory I <sup>H, F</sup>	4
or BIOC 107	Introduction to Biochemistry	

PHYS 114 & PHYS 115	 General Physics I: For Students of the Life Sciences and  General Physics II: For Students of the Life Sciences <sup>F</sup>	8
PSYC 101	 General Psychology <sup>F</sup>	3
<b>Total Hours</b>		<b>26-27</b>

H Honors version available. An honors course fulfills the same requirements as the nonhonors version of that course. Enrollment and GPA restrictions may apply.

F FY-Launch class sections may be available. A FY-Launch section fulfills the same requirements as a standard section of that course, but also fulfills the FY-SEMINAR/FY-LAUNCH First-Year Foundations requirement. Students can search for FY-Launch sections in ConnectCarolina using the FY-LAUNCH attribute.

After admission (<https://catalog.unc.edu/undergraduate/departments/division-radiologic-science/>) to the program, the curriculum in radiologic science includes courses in gross anatomy, pathophysiology, radiography, imaging methods, research, practice issues, and clinical practice. The first year of the program provides the foundation and skills for clinical practice and patient care in diagnostic radiography. The second year of the program builds on this foundation and enhances skills for career and practice advancement through communications, physics, and research. During the second year, the student elects areas of clinical concentration, such as magnetic resonance imaging, computed tomography, advanced diagnostic imaging, cardiac catheterization, and vascular/interventional imaging.

Code	Title	Hours
<b>Summer Session II (Junior Year)</b>		
RADI 440	Gross Anatomy for Health Sciences	3
RADI 442	Introduction to Radiologic Science	3
<b>Junior Year Fall Semester</b>		
RADI 461 or RADI 466	Radiography I Abdominal Sonography	4
RADI 462 or RADI 467	Radiographic Imaging I Ultrasound Principles and Instrumentation	4
RADI 463	 Clinical Education I	4
RADI 660	Pathophysiology	3
<b>Junior Year Spring Semester</b>		
RADI 471 or RADI 474	Radiography II Obstetrics and Gynecology Sonography	3-4
RADI 472 or RADI 478	Radiographic Imaging II Sonographic Imaging I	4
RADI 473	Clinical Education II	4
RADI 670	Integrated Principles of Imaging Analysis	4
<b>Summer Session I and II (Senior Year)</b>		
RADI 574	Clinical Education III	3
RADI 575	Clinical Education IV	5
<b>Senior Year Fall Semester</b>		
RADI 583	Clinical Education V	4
RADI 585 or RADI 479	Radiologic Health Physics Advanced Imaging in Sonography II	3-4
RADI 586	Research in Radiologic Science I	1

RADI 594	Professional Communications and Interactions	3
RADI 694	Clinical Decisions in Radiology	3
<b>Senior Year Spring Semester</b>		
RADI 584	Clinical Education VI	6
RADI 597	Leadership in Radiologic Science	3
RADI 681	Trends in Medical Imaging Practices Issues in the Radiology Practice Environment	3
RADI 686	Research in Radiologic Science II	2
<b>Total Hours</b>		<b>72-74</b>

## Special Opportunities in Radiologic Science

### Experiential Education

All of the clinical education courses provide students with the opportunity to gain competence and proficiency in all areas of medical imaging practice in a variety of clinical environments. Students may also participate in our global experiences in Switzerland and in Malawi.

### Undergraduate Awards

Undergraduate students are considered for the Faculty Award for Excellence, the Award for Academic Excellence, and the Tina Robbins Award.

### Undergraduate Research

Students complete a two-semester research sequence leading to a project and paper during the senior year of the program and are encouraged to submit the research projects to state and national research competitions.

### Certification

Upon graduation, students have completed the requirements to seek eligibility to take the national certification examination from the American Registry of Radiologic Technologists in Radiography or the American Registry for Diagnostic Medical Sonography and in other clinical areas of expertise.

### Accreditation

The program leading to the B.S. degree with a major in radiologic science for diagnostic and interventional radiology is fully accredited by the Joint Review Committee on Education in Radiologic Technology.

### Scholarships and Grants

Students in the Division of Radiologic Science are eligible for Phyllis Ann Canup Pepper Scholarships, the Dr. Jerry Lambiente Loyalty Fund Scholarship, the Rufus "Buddy" Clarke Loyalty Fund Scholarship, the Jerome Puryear and Latonya Brown-Puryear Scholarship, and the Jane Cox Hendrix Scholarships.

## Contact Information

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