

# RADIOLOGIC SCIENCE MAJOR, B.S.

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 with the patient's radiation dose and safety as a factor. In addition to diagnostic radiology and sonography, students may select other imaging modalities and practice areas for additional competence and training. These other areas include specialized areas of sonography, 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 (<https://catalog.unc.edu/undergraduate/departments/division-radiologic-science/>) to the program is required.

## Mission

The radiologic science program prepares students to practice competently and effectively as medical imaging professionals in diverse healthcare environments with awareness of global health issues. The academic and clinical foundation in the curriculum develops graduates with professional flexibility and adaptability to assume prominent roles and responsibilities after graduation in both career and scholarly pursuits.

## 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.

- Exhibit professionalism through consistent, responsible, and ethical behavior.
- Demonstrate knowledge of understanding of acoustic physics, Doppler ultrasound principles, and ultrasound instrumentation to create diagnostic ultrasound images of obstetrical and gynecological anatomy.
- 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>

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

- <sup>F</sup> 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>		
AHSC 440		3
RADI 442	Introduction to Radiologic Science	3
<b>Junior Year Fall Semester</b>		
RADI 461	Radiography I	4
or RADI 466	Abdominal Sonography	
RADI 462	Radiographic Imaging I	4
or RADI 467	Ultrasound Principles and Instrumentation	
RADI 463	 Clinical Education I	4
RADI 660	Pathophysiology	3
<b>Junior Year Spring Semester</b>		
RADI 471	Radiography II	3-4
or RADI 474	Obstetrics and Gynecology Sonography	
RADI 472	Radiographic Imaging II	4
or RADI 478	Sonographic Imaging I	
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	Radiologic Health Physics	3-4
or RADI 479	Advanced Imaging in Sonography II	
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

### Division of Radiologic Science

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### Director

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