

BACHELOR OF SCIENCE IN DIAGNOSTIC MEDICAL SONOGRAPHY

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Diagnostic medical sonographers play a critical role in the healthcare team. The sonographer provides patient services using high-frequency sound waves that produce images of internal structures. Working under the supervision of a physician responsible for the use and interpretation of ultrasound procedures, the sonographer helps gather sonographic data to diagnose a variety of conditions and diseases, as well as monitor fetal development.

To prepare students for careers in sonography and certification examinations in the subspecialty areas, Quinnipiac offers a BS in Diagnostic Medical Sonography. The Diagnostic Medical Sonography program offers didactic, laboratory and clinical training in multiple subspecialties of sonography including abdominal and small parts, breast, vascular technology, OB/GYN and musculoskeletal imaging for the student who is motivated to become a multi-credentialed member of this profession.

The first two years of the bachelor's degree program consists of University Curriculum studies in addition to an introductory course into the field of diagnostic medical sonography. The professional component of the program begins in the third year of study. Each student spends two full years concentrating on didactic sonography classes, laboratory sessions on campus and clinical education at multiple clinical education centers. The curriculum is structured so students can apply the knowledge and skills developed in the classroom and laboratory to the care of patients in the clinical setting. Throughout the professional component of the program, didactic and clinical courses are taken simultaneously to provide the opportunity for immediate application and reinforcement.

Upon completion of their Bachelor of Science in Diagnostic Medical Sonography, students are eligible to apply for the American Registry of Diagnostic Medical Sonography certification. Graduates may take the Sonography Physics and Instrumentation examination in addition to the following ARDMS specialty examinations: abdomen and small parts, breast, vascular technology and obstetrics/gynecology.

The BS in Diagnostic Imaging program requires a minimum of 121 credits for degree completion.

The curriculum for the professional courses in the program is subject to modification as deemed necessary to maintain a high-quality educational experience and keep current with best practices in the profession. The Academic Standing and Progression Committee recommendations regarding student progression, discipline or dismissal will be considered on a case-by-case basis.

Code	Title	Credits
University Curriculum (http://catalog.qu.edu/academics/university-curriculum/)		46
Sonography Requirements		
DMS 100	Foundations of Diagnostic Imaging	1

DMS 101 & 101L	Introduction to Diagnostic Medical Sonography and Sonography Laboratory Practicum I	4
DMS 200	Sonography Physics and Instrumentation I	3
DMS 201	Sonography Physics and Instrumentation II	3
DMS 205	Human Anatomy Lab I	1
DMS 206	Human Anatomy Lab II	1
DMS 210 & 210L	Abdominal and Small Parts Sonography and Abdominal and Small Parts Sonography Lab Practicum	4
DMS 220 & 220L	Vascular Sonography and Vascular Sonography Lab Practicum	4
DMS 260	Sonography Clinical Education II	3
DMS 250	Sonography Clinical Education I	3
DMS 270	Sonography Clinical Education III	5
DMS 297 & 297L	Methods of Patient Care and Methods of Patient Care Lab	3
DMS 330 & 330L	OB/GYN Sonography and OB/GYN Sonography Lab Practicum	4
DMS 340 & 340L	Breast Sonography and Breast Sonography Lab Practicum	4
DMS 350 & 350L	Musculoskeletal Sonography and MSK Sonography Lab Practicum	4
DMS 380	Sonography Clinical Education IV	3
DMS 390	Sonography Clinical Education V	3
DMS 414	Research Analysis and Critique (RS 414)	3
DMS 499	Capstone (RS 499)	3
Biology, Physics, and Medical Terminology Requirements		
BIO 103	Concepts in Human Biology	3
BIO 211 & 211L	Human Anatomy and Physiology I and Human Anatomy and Physiology Lab I	4
BIO 212 & 212L	Human Anatomy and Physiology II and Human Anatomy and Physiology II Lab	4
BMS 318	Pathophysiology	3
HSC 202	Medical Terminology	2
PHY 101 & 101L	Elements of Physics and Elements of Physics Lab	
Total Credits		121

This is a *recommended* plan of study as course plans are subject to change. The curriculum for the professional courses in the program is subject to modification as deemed necessary to maintain a high-quality educational experience and keep current with best practices in the profession. The Academic Standing and Progression Committee

recommendations regarding student progression, discipline or dismissal will be considered on a case-by-case basis.

Course	Title	Credits
First Year		
Fall Semester		
EN 101	Introduction to Academic Reading and Writing (UC Writing) ¹	3
FYS 101	First-Year Seminar	3
MA 275	Biostatistics ¹	3
DMS 100	Foundations of Diagnostic Imaging	1
BIO 103	Concepts in Human Biology ²	3
Credits		13
Spring Semester		
EN 102	Academic Writing and Research	3
UC Elective		3
HSC 202	Medical Terminology	2
UC Elective		3
PHY 101 & 101L	Elements of Physics and Elements of Physics Lab ³	4
Credits		15
Second Year		
Fall Semester		
BIO 211 & 211L	Human Anatomy and Physiology I and Human Anatomy and Physiology Lab I	4
UC Elective		3
UC Elective		3
UC Elective		3
UC Elective		3
Credits		16
Spring Semester		
BIO 212 & 212L	Human Anatomy and Physiology II and Human Anatomy and Physiology II Lab	4
DMS 101 & 101L	Introduction to Diagnostic Medical Sonography and Sonography Laboratory Practicum I (UC Elective)	4
UC Elective		3
UC Elective		3
Credits		14
Third Year		
Fall Semester		
DMS 200	Sonography Physics and Instrumentation I	3
DMS 210 & 210L	Abdominal and Small Parts Sonography and Abdominal and Small Parts Sonography Lab Practicum	4
DMS 250	Sonography Clinical Education I	3
DMS 297 & 297L	Methods of Patient Care and Methods of Patient Care Lab	3
UC Elective		3
Credits		16
Spring Semester		
DMS 201	Sonography Physics and Instrumentation II	3

DMS 220 & 220L	Vascular Sonography and Vascular Sonography Lab Practicum	4
DMS 260	Sonography Clinical Education II	3
UC Elective		3
Credits		13
Summer Semester		
DMS 270	Sonography Clinical Education III	5
Credits		5
Fourth Year		
Fall Semester		
DMS 205	Human Anatomy Lab I	1
DMS 330 & 330L	OB/GYN Sonography and OB/GYN Sonography Lab Practicum	4
DMS 380	Sonography Clinical Education IV	3
DMS 414	Research Analysis and Critique (RS 414)	3
BMS 318	Pathophysiology	3
Credits		14
Spring Semester		
DMS 206	Human Anatomy Lab II	1
DMS 340 & 340L	Breast Sonography and Breast Sonography Lab Practicum	4
DMS 350 & 350L	Musculoskeletal Sonography and MSK Sonography Lab Practicum	4
DMS 390	Sonography Clinical Education V	3
DMS 499	Capstone (RS 499)	3
Credits		15
Total Credits		121

¹ Initial placement in the English and mathematics courses is determined by placement examination and an evaluation of high school units presented. The minimum mathematics requirement is MA 275 or its equivalent.

² This course is a prerequisite for the required BIO 211 and BIO 211L in the next year.

³ Associated lab is required for Physics 101. PHY 110 with lab is acceptable to fulfill the requirement. Credits will also apply to the UC Natural Science requirement.

All diagnostic medical sonography course requirements must be completed in the appropriate semester as indicated above. All diagnostic medical sonography courses, beginning with DMS 101 and DMS 101L, are reserved for DMS majors only.

Student Learning Outcomes

Upon completion of the Diagnostic Medical Sonography program, students will demonstrate the following competencies:

Goal: The students will be clinically competent.

- Clinically Knowledgeable:** Apply foundational skills and knowledge from didactic and laboratory courses to clinical practice.
- Procedurally Knowledgeable:** Demonstrate procedural knowledge from all DMS coursework.

Goal: The students will demonstrate effective communication skills.

1. **Effective Communication:** Execute effective communication with patients.
2. **Oral Proficiency:** Demonstrate the ability to present clear and creative ideas related to a case study.

Goal: The students will demonstrate critical thinking.

1. **Critical Decision-Making:** Demonstrate the ability to obtain, review and integrate patient history, physical examination and sonographic findings to provide a physician with an oral or written interpretation of technical findings.
2. **Image Analysis:** Evaluate images for quality and diagnostic value.

Goal: The students will grow as professionals.

1. **Professional Ethics:** Understand and apply ethical decision-making.
2. **Professional Behaviors:** Conduct themselves professionally.
3. **Professional Research:** Create a culminating capstone research project.

Mission Statement

The mission of the Diagnostic Medical Sonography program at Quinnipiac University is to provide a quality and comprehensive education, through didactic, laboratory and clinical experiences, that will prepare students to become multi-credentialed sonographers. The program offers multiple clinical assignments to provide maximum exposure to diversified sonographic procedures.

The program prepares students to be competent in the art and science of diagnostic medical sonography, both for career entry and advanced study. Graduates of the program are prepared to meet the needs of the community for highly qualified professionals.

Admission to the Program

Candidates applying for admission to the Diagnostic Medical Sonography program are required to have at least three years of high school college preparatory mathematics and one year of biology. One year of anatomy and physiology and one year of general physics is highly recommended. In addition, the scores of the SAT or the ACT are an important consideration. Related healthcare experience is highly desirable. Prospective candidates also must satisfy general Quinnipiac University Admission Requirements (<http://catalog.qu.edu/general-information/admissions/>).

Program Policies

In addition to the general policies of Quinnipiac University, such as due process and academic honesty, the following apply to students enrolled in the Diagnostic Medical Sonography program:

Progression in the Program

Students in the Diagnostic Medical Sonography (DMS) program must meet both GPA and final course grade requirements to remain in good standing. A cumulative GPA of 3.00 and a programmatic GPA of 3.00 must be maintained each semester. In addition, students must earn a final grade of B- or higher in all DMS courses. Grades below a B- are not acceptable.

The calculation of the programmatic GPA and enforcement of final course grade requirements begin with DMS 100 and apply to all DMS coursework thereafter.

Any student who fails to meet the GPA requirements or earns a grade below B- in a DMS course will be referred to the Diagnostic Imaging Department's Progression and Retention Committee (P&RC) for review. Sanctions may be imposed, up to and including dismissal from the program.

Technical Standards

The Diagnostic Medical Sonography program is a rigorous and intense program that places specific requirements and demands on the students enrolled in the program. An objective of this program is to prepare graduates to enter a variety of employment settings and to render care to a wide spectrum of individuals. The technical standards set forth by the Diagnostic Medical Sonography program establish the essential qualities considered necessary for admitted students to this program to achieve the knowledge, skills and competencies of an entry-level sonographer.

All students admitted to the program must meet the established abilities and expectations. In the event a student is unable to fulfill these technical standards, with or without reasonable accommodation, the student will not be admitted or may be dismissed from the program.

Students are required to verify they understand and meet the technical standards or that they believe that, with certain reasonable accommodations, the technical standards can be met. Verification of understanding includes the student reading, signing and returning a copy of the Technical Standards Agreement to the program director. A listing of the technical standards can be found on the program's web page (<https://www.qu.edu/schools/health-sciences/programs/bs-diagnostic-medical-sonography.html>), and an agreement form is located in the Diagnostic Medical Sonography student handbook.

Transportation

Multiple clinical education centers are used throughout the professional component of the program. Students are responsible for their own transportation to and from these sites.

Summer Study

All students are required to perform one clinical assignment during the summer semester, third year (DMS 270). This clinical practicum is performed during summer sessions I and II and may be performed only in a clinical education site currently affiliated with Quinnipiac's Diagnostic Medical Sonography program.

Additional Program Costs

As a clinical education program, the Diagnostic Medical Sonography major requires some expenses that go beyond standard university tuition and fees:

1. **Clinical/Fieldwork Education Travel** (e.g., gas, parking, public transportation) – **Costs: variable**
2. **Immunizations** – Consistent with the School of Health Sciences policy, all students must have a full battery of immunizations and in some cases titer affirmation of immunity for common diseases including but not limited to: MMR, HepB, varicella, polio, TDAP, TB and influenza. These must be documented prior to the start of clinical experiences during the sophomore year and must be maintained through the undergraduate education. **Costs: variable (please check with your insurance carrier)**
3. **Background Check** – All students must undergo an initial background check prior to the start of any clinical/fieldwork experience.

- a. Initial background check cost is \$63 for all domestic addresses for the past 7 years or \$158 for students who have resided in New York state in the last 7 years due to NY state surcharge.
- b. Some students may be required to do an annual recheck one year after the initial background recheck. **Cost: \$32 per annual recheck**

4. **Drug Screening – Cost: \$42.25**

5. **Liability Insurance** – All students have liability insurance coverage through the university, free of charge, while performing required clinical activity. Students may choose to purchase additional coverage at their own expense.

6. **EXXAT and APPROVE** – Students enrolled in professional programs must enroll in EXXAT and APPROVE.

- a. EXXAT is the clinical tracking and assessment program used by the School of Health Sciences. **Cost: one-time payment of \$150 per student for the current major (students are responsible for this cost).**
- b. APPROVE is the program within EXXAT that tracks all student health and safety records, provides documentation to prospective clinical sites, and provides notification of impending expiration dates. **Cost: \$35 for first year, \$10 per year thereafter**

7. **Certification examination costs:** Please visit the American Registry of Diagnostic Medical Sonography website (<https://www.ardms.org/>) for current cost of exams.