



Ultrasound (Diagnostic Medical Sonography)

Program Information

This program of study is designed to provide academic and clinical training in the field of general (OB/GYN and Abdominal/Superficial Structures) ultrasound (diagnostic medical sonography). The Associate of Applied Science degree awarded at program completion is a four-semester, competency-based curriculum that includes practical experience in regional health institutions. The ultrasound program at Trenholm State is currently accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP). By attending a program accredited by CAAHEP, you will be able to apply to take the national certification examinations offered by the ARDMS/ARRT. By successfully completing the certification exams, you will be awarded the credential 'registered sonographer'.

Occupational Choices

Employment of diagnostic medical sonographers is projected to grow 23 percent from 2016 to 2026, much faster than the average for all occupations. Employment of cardiovascular technologists and technicians, including vascular technologists, is projected to grow 10 percent from 2016 to 2026, faster than the average for all occupations.

Sources: Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, 2016-2026, 2018 Survey

Average Full-Time Wage

The median annual wage for cardiovascular technologists and technicians was \$55,270 in May 2017. The median wage is the wage at which half the workers in an occupation earned more than that amount and half earned less. The lowest 10 percent earned less than \$28,680, and the highest 10 percent earned more than \$90,760.

The median annual wage for diagnostic medical sonographers was \$71,410 in May 2017. The lowest 10 percent earned less than \$50,760, and the highest 10 percent earned more than \$99,840.

Sources: Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, 2016-2026, 2018 Survey

Admission Criteria

ADMISSION REQUIREMENTS:

(Program applications and deadline for application submission will be posted to the Ultrasound (Diagnostic Medical Sonography) webpage in April each year).

Applicants must:

- Meet all general admission requirements of Trenholm State Community College and be in good standing.
- Complete all general required courses (prerequisites) courses with a minimum grade of "C" in each course (see listing below).
- Minimum ACT score of 19.
- Attain a minimum cumulative GPA of 2.5 or greater on a 4.0 scale with a grade of "C" or better on all general required prerequisite courses. Math/Sciences courses must have been completed within seven (7) years of the date of expected entry into the DMS-program.
- Submit a completed DMS-program application by the application deadline to include all of the following documents:
 1. Completed DMS-Program Application. The program application can be found on the website in April. Select Academics, Programs of Study, then Diagnostic Medical Sonography.
 2. Copies of transcripts from ALL colleges previously attended
 3. A copy of your Trenholm State transcript showing completion and transfer of ALL prerequisite courses
 4. A copy of your ACT score showing 19 or higher (all applicants will be ranked according to his/her ACT score. Applicants with the highest ACT scores will be issued acceptance letters. The average ACT score for the Aug 2016 cohort was 21.3; the average ACT score

Estimated Program Length & Cost *

Award	Length	Credit Hours	Tuition Fees	Books	Tools	Supplies
Associate Degree (w/ prereqs)	6 Terms	76	\$11,780	\$1,250	0	\$350
(Not including prerequisites)	4 Terms	52	\$8,060	\$1,250	0	\$350

* Tax not included. Prices are subject to change without prior notice; cost of books may vary considerably among suppliers. Cost of general education books is in addition to the total listed above. The length of the program is based on full-time status of 12-15 credit hours per term. Enrollment in transitional level general education courses will alter the length of the program.

for the August 2015 cohort was 23.2.

- Candidates must be able to meet all Essential Functions required of the program with or without accommodation:

- Lift more than 50 pounds routinely
- Push and pull routinely
- Bend and stoop routinely
- Have full use of both hands, wrists and shoulders
- Distinguish audible sounds
- Adequately view sonograms, including color distinctions
- Work standing on their feet 80% of the time
- Interact compassionately and effectively with the sick or injured
- Assist patients on and off examining tables
- Communicate effectively with patients and other health care professionals
- Organize and accurately perform the individual steps in a sonographic procedure in the proper sequence

Admission to the Ultrasound (Diagnostic Medical Sonography) Program is competitive, and the number of students is limited by the number of faculty and clinical facilities available. Meeting minimal requirements does not guarantee acceptance.

Awards Available

Associate of Applied Science
Ultrasound
(Diagnostic Medical Sonography)

Program Contact

Brandi Merrill
Program Coordinator/Instructor
334-420-4358
Location: Trenholm Campus - Bldg. H

As part of ongoing planning and evaluation, the College regularly evaluates student learning outcomes for each program.

Fall Semester 2019 Applicants:

**Please refer to the
program website or
contact the program
coordinator for changes
to DMS curriculum that
will be effective Fall
Semester 2019.**

**Associate of Applied Science
Ultrasound
(Diagnostic Medical Sonography)**

General Education Requirements (23 hours)

Area I - Written Composition (6 hours)

ENG-101 *	English Composition I	3
ENG-102	English Composition II	3
ENG-130	Technical Report Writing	3

Area II - Humanities & Fine Arts (3 hours)

(Humanities and Arts disciplines include but are not limited to: Area/Ethnic Studies, Art and Art History, Foreign Languages, Music and Music History, Philosophy, Ethics, Religious Studies, Theater and Dance.)

Note: If SPH-106, SPH-107, SPA-101 or SPA-102 has been taken an additional 3 semester hours in Humanities and Fine Arts must be taken to satisfy requirements in Area II.

Arts:

ART-100	Art Appreciation	3
MUS-101 *	Music Appreciation	3

Humanities:

PHL-106	Intro to Philosophy	3
PHL-200	Ethics in the Workplace	3
PHL-206	Ethics & Society	3
PHL-210	Ethics and the Health Sciences	3
REL-100	History of World Religions	3
REL-151	Survey of Old Testament	3
REL-152	Survey of New Testament	3
SPA-101	Intro Spanish I	3
SPA-102	Intro Spanish II	3
SPH-106 *	Fundamentals of Oral Comm	3
SPH-107	Fundamentals of Public Speaking	3

Literature:

ENG-251	American Literature I	3
ENG-252	American Literature II	3
ENG-261	English Literature I	3
ENG-262	English Literature II	3
ENG-271	World Literature I	3
ENG-272	World Literature II	3

Area III - Natural Science & Mathematics (6-7 hours)

(In addition to Mathematics, disciplines in the Natural Sciences include: Astronomy, Biological Sciences, Chemistry, Geology, Physical Geography, Earth Science, Physics, and Physical Science.)

Note: 3 semester hours in MTH must be completed. Additional hours can be taken in the Natural Science area.

Mathematics:

MTH-100 *	Intermediate Algebra	3
MTH-103	Intro to Technical Mathematics	3
MTH-104	Plane Trigonometry	3
MTH-110	Finite Mathematics	3
MTH-112	Precalculus Algebra	3
MTH-116	Mathematical Applications	3

Natural Sciences:

BIO-101	Introduction to Biology I	4
BIO-102	Introduction to Biology II	4
BIO-103	Principles of Biology I	4
BIO-104	Principles of Biology II	4
BIO-201 *	Human Anatomy & Physiology I	4
BIO-202	Human Anatomy & Physiology II	4

PHS-111	Physical Science I	4
PHS-112	Physical Science II	4
PHY-120 *	Introduction to Physics	4

Area IV - History, Social & Behavioral Sciences (3 hours):

(Social and Behavioral Sciences include, but are not limited to: Anthropology, Economics, Geography, Political Science, Psychology, and Sociology.)

Note: Must complete 3 semester hours.

History:

HIS-101	Western Civilization I	3
HIS-102	Western Civilization II	3
HIS-121	World History I	3
HIS-122	World History II	3
HIS-201	United States History I	3
HIS-202	United States History II	3

Social and Behavioral Sciences:

PSY-200 *	General Psychology	3
PSY-210	Human Growth and Development	3
SOC-200	Introduction to Sociology	3
POL-200	Introduction to Political Science	3
POL-211	American National Government	3

Area V: Pre-Professional/College Requirements:

(Courses appropriate to the degree requirements and major of the individual student and electives.)

College Requirements:

ORI-101 *	Orientation to College	1
DMS-202	Foundations of Sonography	2
DMS-203	Sonographic Terms	2
DMS-205	Abdominal Sonography w/ Lab	4
DMS-206	Gynecologic Sonography w/ Lab	4
DMS-207	Abdominal Pathology	3
DMS-215	Intro Sonographic Principles & Instr.	2
DMS-216	Sonographic Principles & Instr.	3
DMS-217	Sonographic Principles & Instr. Lab	1
DMS-220	Obstetrical Sonography I	3
DMS-221	Obstetrical Sonography II	3
DMS-223	Sonography Lab I	1
DMS-225	Superficial Sonography	1
DMS-229	Sonography Preceptorship I	2
DMS-230	Sonography Preceptorship II	3
DMS-231	Sonography Preceptorship III	4
DMS-232	Sonography Preceptorship IV	5
DMS-240	Sonography Seminar I	2
DMS-241	Sonography Seminar II	3
DMS-245	Sonography Case Presentation	1
DMS-250	Intro to Advanced Sonography	3

Note: Although a CIS course is not required, all DMS-students will be required to demonstrate computer literacy through online assignment, presentations and other computer-based activities. Students must also complete computer literacy competency assignment.

Required General Education * (23 credit hours)

* Please Note: These courses must be completed prior to applying to the Diagnostic Medical Sonography program. All courses are offered at Trenholm State Community College. Transferability of courses from other education institutions will be assessed upon submission of a complete College application.

Area V Credit Hours: 53 Total Credit Hours: 76

Course Descriptions Ultrasound (Diagnostic Medical Sonography)

Course #	Course Title	Credit Hours
DMS-202	FOUNDATIONS OF SONOGRAPHY COREQUISITE: DMS-203, DMS-205, DMS-206, DMS-215, DMS-229 PREREQUISITE: Admission to program This course provides the student with elements of the history and development of the use of sonography in medical imaging. Students also are provided concepts in patient care and medical ethics and law to include cultural diversity. Emphasis in theory and lab is placed on patient assessment and considerations of physical and psychological conditions in both routine and emergency situations. Upon completion, students will demonstrate knowledge of the history of sonographic imaging, medical ethic dilemmas that may arise, as well as demonstrate/explain patient care procedures appropriate to setting and situation. This is a CORE course.	2
DMS-203	SONOGRAPHIC TERMS COREQUISITE: DMS-202, DMS-205, DMS-206, DMS-215, DMS-229 PREREQUISITE: Admission to program This course will provide the sonography student with a working knowledge of medical terminology and terminology utilized in the practice of sonography. The student will be expected to complete workbook/computer assignments. Upon completion students will be able to communicate and utilize medical terminology.	2
DMS-205	ABDOMINAL SONOGRAPHY I with LAB COREQUISITE: DMS-202, DMS-203, DMS-206, DMS-215, DMS-229 PREREQUISITE: Admission to program This course will provide the student the sonographic technical skills needed to perform a diagnostic abdominal sonogram. Various protocols will be introduced for the routine examination as well as additional views needed to demonstrate pathology. The student will participate in classroom and lab demonstrations and will be required to develop a protocols notebook. At course completion the student will be prepared to perform a complete abdominal sonogram. This is a CORE course.	4
DMS-206	GYNECOLOGIC SONOGRAPHY with LAB COREQUISITE: DMS-202, DMS-203, DMS-205, DMS-215, DMS-229 PREREQUISITE: Admission to program This course will familiarize the student with the transabdominal and transvaginal protocols of gynecologic scanning and common pathologies of the female reproductive system as seen on ultrasound. Lab values and patient history will be stressed as well as correlation with images from other modalities. The student will be able to perform a transabdominal pelvic sonogram at course completion. This is a CORE course.	4
DMS-207	ABDOMINAL PATHOLOGY COREQUISITE: DMS-216, DMS-220, DMS-223, DMS-225, DMS-230 PREREQUISITE: DMS-202, DMS-203, DMS-205, DMS-206, DMS-215, DMS-229 This course will provide the student with a working knowledge of the sonographic appearance and pathophysiology of common diseases/abnormalities of the abdomen. Associated history, symptoms, lab values, treatments and appearance on other imaging modalities will be demonstrated. The student will be required to conduct research for presentation. At course completion, students will be able to identify many major pathologies of the abdomen on sonograms. This is a CORE course.	3
DMS-215	INTRO TO SONOGRAPHIC PRIN/INSTR. COREQUISITE: DMS-202, DMS-203, DMS-205, DMS-206, DMS-229 PREREQUISITE: Admission to program This course is a study and review of basic algebraic equations, word problem solving, metric unit conversions, binary numbers and logarithms usage. The student that completes this course successfully will be better prepared for entry into sonographic principles and instrumentation.	2
DMS-216	SONOGRAPHIC PRINCPLS/INSTR. COREQUISITE: DMS-207, DMS-220, DMS-223, DMS-225, DMS-230 PREREQUISITE: DMS-202, DMS-203, DMS-205, DMS-206, DMS-215, DMS-229 This course will provide the student with knowledge of the principles of sound and imaging instrumentation as applied to sonography. The physical nature of sound waves and how those waves interact with mediums and how they can be successfully utilized in diagnostic imaging will be studied. Upon completion the student will be able to produce sonographic images. This is a CORE course.	3

Course #	Course Title	Credit Hours
DMS-217	SONOGRAPHIC PRINCIPLES AND INSTR. LAB COREQUISITE: DMS-221, DMS-231, DMS-240, DMS-245 PREREQUISITE: DMS-202, DMS-203, DMS-205, DMS-206, DMS-215, DMS-229, DMS-207, DMS-216, DMS-220, DMS-223, DMS-225, DMS-230 This lab allows students to perform quality assurance tests and surveys. Students will also investigate statistical applications utilized in medical research. Upon completion the student will be able to develop a quality assurance program. This is a CORE course.	1
DMS-220	OBSTETRICAL SONOGRAPHY I COREQUISITE: DMS-207, DMS-216, DMS-223, DMS-225, DMS-230 PREREQUISITE: DMS-202, DMS-203, DMS-205, DMS-206, DMS-215, DMS-229 This course will familiarize the student with the sonographic appearance of the gravid pelvis and normally developing fetus. Protocols for determining gestational age and fetal viability will be studied. Lab values associated with pregnancy will be covered. At completion, the student will be able to differentiate between normal and problem pregnancy progression. This is a CORE course.	3
DMS-221	OBSTETRICAL SONOGRAPHY II COREQUISITE: DMS-217, DMS-231, DMS-240, DMS-245 PREREQUISITE: DMS-202, DMS-203, DMS-205, DMS-206, DMS-215, DMS-229, DMS-207, DMS-216, DMS-220, DMS-223, DMS-225, DMS-230 This course will educate students as to the sonographic appearance and correlated finding of several fetal anomalies. Genetic links with certain anomalies will be studied. The student will research and present materials of selected anomalies in class. At completion, student will identify anomalies that appear in fetal sonograms. This is a CORE course.	3
DMS-223	SONOGRAPHIC LAB I COREQUISITE: DMS-207, DMS-216, DMS-220, DMS-225, DMS-230 PREREQUISITE: DMS-202, DMS-203, DMS-205, DMS-206, DMS-215, DMS-229 This course is designed to allow students the opportunity to improve their application of knowledge gained in other courses. Content will vary depending on student needs as determined by the instructor.	1
DMS-225	SUPERFICIAL SONOGRAPHY COREQUISITE: DMS-207, DMS-216, DMS-220, DMS-223, DMS-230 PREREQUISITE: DMS-202, DMS-203, DMS-205, DMS-206, DMS-215, DMS-229 This course will review the anatomy and familiarize students with scanning protocols for the thyroid, parathyroid, breast, scrotum, male pelvis and other superficial structures. Common pathologies will be discussed and correlated with other imaging modalities. Upon completion, students will identify protocols appropriate to specific techniques and will perform superficial sonograms. Medical terminology is emphasized throughout this course. This is a CORE course.	1
DMS-229	SONOGRAPHY PRECEPTORSHIP I COREQUISITE: DMS-202, DMS-203, DMS-205, DMS-206, DMS-215 PREREQUISITE: Admission to program This course provides the sonography student with the opportunity to practice patient care skills and use beginning sonographic skills in a clinical environment. At course completion, the student should be able to provide basic patient care needs for the individual scheduled for a sonogram and create sonographic images pertinent to the current level of didactic training in general sonography specialties. Competencies will be required.	2
DMS-230	SONOGRAPHY PRECEPTORSHIP II COREQUISITE: DMS-207, DMS-216, DMS-220, DMS-223, DMS-225 PREREQUISITE: DMS-202, DMS-203, DMS-205, DMS-206, DMS-215, DMS-229 This course provides the student with the opportunity to develop additional sonographic skills in the clinical setting. The student will assist with and perform sonographic exams pertinent to the level of didactic training in general sonography specialties. Competencies will be required. This is a CORE course.	3
DMS-231	SONOGRAPHY PRECEPTORSHIP III COREQUISITE: DMS-217, DMS-221, DMS-240, DMS-245 PREREQUISITE: DMS-202, DMS-203, DMS-205, DMS-206, DMS-215, DMS-229, DMS-207, DMS-216, DMS-220, DMS-223, DMS-225, DMS-230 This course provides a continuum in the development of sonographic skills in all general sonographic specialties while in the clinical setting. Students should be able to perform more exams with less assistance from the supervising sonographer. Competencies will be required. This is a CORE course.	4

Course #	Course Title	Credit Hours
DMS-232	SONOGRAPHY PRECEPTORSHIP IV COREQUISITE: DMS-241, DMS-250 PREREQUISITE: DMS-202, DMS-203, DMS-205, DMS-206, DMS-215, DMS-229, DMS-207, DMS-216, DMS-220, DMS-223, DMS-225, DMS-230, DMS-217, DMS-221, DMS-231, DMS-240, DMS-245 This course will provide an in-depth practice of all general sonographic skills in the clinical setting. Upon completion the student will perform general specialty sonograms with little to no assistance from the supervising sonographer. Competencies will be required. This is a CORE course.	5
DMS-240	SONOGRAPHY SEMINAR I COREQUISITE: DMS-217, DMS-221, DMS-231, DMS-245 PREREQUISITE: DMS-202, DMS-203, DMS-205, DMS-206, DMS-215, DMS-229, DMS-207, DMS-216, DMS-220, DMS-223, DMS-225, DMS-230 This course provides a review for National Registry Exam. Topics include sonographic principles and instrumentation. Mock registries must be passed with a grade of 75% or better to complete this course. This is a CORE course.	2
DMS-241	SONOGRAPHY SEMINAR II COREQUISITE: DMS-232, DMS-250 PREREQUISITE: DMS-202, DMS-203, DMS-205, DMS-206, DMS-215, DMS-229, DMS-207, DMS-216, DMS-220, DMS-223, DMS-225, DMS-230, DMS-217, DMS-221, DMS-231, DMS-240, DMS-245 This course provides a review for the National Registry Exam. Topics include abdominal, superficial, gynecological, and obstetrical sonography. Mock registries must be passed with a grade of 75% or better to complete this course. This is a CORE course.	3
DMS-245	SONOGRAPHY CASE PRESENTATIONS COREQUISITE: DMS-217, DMS-221, DMS-231, DMS-240 PREREQUISITE: DMS-202, DMS-203, DMS-205, DMS-206, DMS-215, DMS-229, DMS-207, DMS-216, DMS-220, DMS-223, DMS-225, DMS-230 This course allows students to share interesting sonographic cases obtained during clinical rotations. Students are required to present cases with sonographic images, reports, patient history and symptoms and correlating reports from other exams/tests performed. The cases become the property of the program for use as future reference material. By the end of the term, students will have developed proficiency and expertise in case presentation.	1
DMS-250	INTRO TO ADVANCED SONOGRAPHY COREQUISITE: DMS-232, DMS-241 PREREQUISITE: DMS-202, DMS-203, DMS-205, DMS-206, DMS-215, DMS-229, DMS-207, DMS-216, DMS-220, DMS-223, DMS-225, DMS-230, DMS-217, DMS-221, DMS-231, DMS-240, DMS-245 This course will introduce the student to vascular, cardiac, neurology, and orthopedic sonography. Advanced technologies in these fields will be researched. At completion, students will identify and describe skills and modalities in sonography.	3