

A grayscale photograph of the Sanford Medical Center Fargo building, a large multi-story brick structure with a central tower featuring a circular logo. The image is faded and serves as a background for the text.

Sanford Medical Center Fargo Sonography Program

Handbook 2024-2025

3148 Fiechtner Drive S, Fargo, ND 58103

(701) 234-6340

TABLE OF CONTENTS

SPONSORING ORGANIZATION HISTORY 2

MISSION STATEMENT 3

PROGRAM GOALS 3

PROFESSION DESCRIPTION 4

ORGANIZATIONAL STRUCTURE 4

PROGRAM CERTIFICATE OF COMPLETION..... 5

ACCREDITATION 5

CERTIFICATION 5

ACADEMIC CALENDAR 2024-2026 6

CURRICULUM 6

 Program Effectiveness 7

ECHOCARDIOGRAPHY COURSE DESCRIPTIONS 8

DIAGNOSTIC MEDICAL SONOGRAPHY COURSE DESCRIPTIONS 11

ADMISSIONS AND ACCEPTANCE 13

 Admissions Policy Statement..... 13

 Admissions Qualifications / Selection 13

 External Coursework..... 14

 Acceptance Fee 14

 Basic Life Support/Cardiopulmonary Resuscitation Certification 14

 Criminal Background Check 14

 Student Health 14

 Professional Liability Insurance 15

 Professional Membership 15

 State Licensure..... 15

 Student Pictures..... 15

 Technical Standards and Accommodations for Equal Opportunity 15

FINANCIAL POLICIES 16

 Financial Aid 16

 Remuneration 16

 Tuition and Student Fee Summary 16

 Costs Incurred by Student..... 16

 Withdrawal and Refund 17

CONTACT INFORMATION..... 17

 Sanford Medical Center Fargo Sonography Program 17

This handbook provides a description of the policies, degree requirements, course offerings, and procedures of the Sanford Medical Center Fargo School of Sonography “Sanford Medical Center Fargo Sonography Program.” The Sonography Program reserves the right to change any of the policies and procedures described in this handbook and to apply these changes to any or all its students in its sole and absolute discretion. Students shall read the Sanford Medical Center Fargo Sonography Program Student Handbook and are required to comply with all policies, rules, and regulations of Sanford Medical Center Fargo and the Sonography Program.

Upon review of the Student Handbook, the student will read and sign the “Handbook and Policy Consent Form.” This form will become part of the student’s file.

SPONSORING ORGANIZATION HISTORY

The Sonography Program is sponsored by Sanford Medical Center Fargo located in Fargo, ND. Sanford Health is a not-for-profit organization whose history dates back to the early 1900s. In 1905, two Fargo physicians, Dr. Olaf Sand and Dr. Nils Tronnes, met with civic leaders above Lars Christianson’s drug store at 10 Broadway to discuss the need for a new hospital. Uncleared land at Fargo’s northern edge emerged as the ideal location. In February 1908, St. Luke’s Hospital opened its doors. Within three days the 35-bed hospital was filled to capacity. Dr. Sand and Tronnes invited area physicians to join them in medical practice, encouraging the advancement of specialists to better meet complex needs. In 1919 they officially formed Fargo Clinic. Located next to St. Luke’s Hospital, the Fargo Clinic building opened in 1921.

The innovation and leadership of these pioneering physicians set the stage for many milestones over the past hundred years. Their legacy, MeritCare Health System, became one of the nation’s first integrated health systems. In 2009, MeritCare merged with Sanford Health in Sioux Falls, South Dakota and today is an integrated health system headquartered in the Dakotas. The organization merged with the Evangelical Lutheran Good Samaritan Society in 2018. Sanford Health, the largest rural health system in the United States, is dedicated to transforming the health care experience and providing access to world-class health care in America’s heartland. The organization serves more than one million patients across 250,000 square miles.

The Sanford Medical Center Fargo Sonography Program is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP). The Program provides services to the communities Sanford Health serves. The Program began in 2017, with the first class graduating in 2019. The Sonography Program allows regional employers to hire qualified sonographers to fill their employment needs. The demand for sonographers continues to grow with the continual expansion of Sanford Health services. This provides students the opportunity to gain experience at a high-volume medical center while remaining in the area during the program and for future employment.

SANFORD HEALTH MISSION AND VISION

Dedicated to sharing God’s love through the work of health, healing, and comfort.

Improving the human condition at every stage of life through exceptional care, spiritual enrichment, innovation, and discovery.

MISSION STATEMENT

It is the mission of the Sanford Medical Center Fargo Sonography Program to provide a quality education designed to develop individuals who think critically, provide exceptional patient care, behave ethically and professionally, and are prepared for lifelong learning in the field of sonography.

To achieve these ends, we commit ourselves to support each student in their pursuit to meet the didactic and clinical competencies according to the goals and objectives of the Sonography Program and the education standards established and adopted by the sonography profession. In all areas of education, Sanford desires to communicate its distinctive philosophy of excellence and dedication to those who come to learn and to provide quality healthcare to the patients and community served.

PHILOSOPHY

The Sanford Medical Center Fargo Sonography Program serves as an upper-division program teaching qualified students to become professional sonographers. Faculty offer a collegiate level program of sonography education that prepares graduates for professional practice in one or more specialties of care. The program implements its mission through a clearly defined set of objectives and outcomes that meet and exceed CAAHEP accreditation standards.

The philosophy of the faculty is congruent with the Sonography Program mission. The faculty is committed to providing a quality sonography program, which prepares the graduate to function as an entry-level sonographer in a variety of healthcare settings. The faculty exemplifies the mission of Sanford Medical Center Fargo – *Dedicated to sharing God's love through the work of health, healing, and comfort.*

PROGRAM GOALS

Program goals reflect the operation of the mission of the program, philosophy of the faculty, and the student outcomes of the curriculum. Student outcomes are available on the program website.

Goal (Diagnostic Medical Sonography): To prepare competent entry-level sonographers in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains for the Abdominal-Extended, Obstetric and Gynecologic, and Vascular Sonography concentrations.

Goal (Cardiac Sonography): To prepare competent entry-level sonographers in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains for the Adult Cardiac Sonography concentration.

Upon program completion, the graduate will be able to:

1. Demonstrate the knowledge and skill necessary for a clinically competent, safe, entry-level diagnostic medical sonographer.
2. Demonstrate effective communication and an understanding of interprofessional, ethical, legal, moral, and medical values.
3. Employ critical thinking and problem solving for decision making in sonography practice.
4. Accept responsibility for on-going professional growth and continued learning.

PROFESSION DESCRIPTION

Sonography is a non-invasive, diagnostic medical imaging procedure that produces dynamic images allowing visualization of organs or systems in the body using high-frequency sound waves. The profession of diagnostic sonography is comprised of abdominal, obstetric, gynecologic, breast, musculoskeletal, vascular, and cardiac sonography. Abdominal sonography encompasses the structures of the abdomen and small parts. Obstetric/gynecologic sonography assesses the organs of the female pelvis as well as fetal development and observation. Vascular sonography focuses on venous and arterial flow patterns throughout the body. Cardiac sonography, also known as echocardiography, specializes in imaging of the heart and great vessels.

Sonographers are highly skilled, board-certified professionals that perform diagnostic imaging for interpretation by a licensed physician. Diagnostic medical sonographers are committed to enhanced patient care and continuous quality improvement that increases knowledge and technical competence. Sonographers use independent, professional, and ethical judgment and critical thinking to perform diagnostic procedures safely.

The diagnostic medical sonographer, cardiac sonographer, and vascular technologist are able to perform the following:

- Obtain, review, and integrate pertinent patient history and clinical data to facilitate diagnostic results.
- Perform appropriate procedures and record anatomic, pathologic, and/or physiologic data for interpretation by a licensed physician.
- Record, analyze, process, and communicate diagnostic data and pertinent observations during the procedure to the interpreting physician.
- Exercise discretion and judgment in the performance of sonographic and/or other diagnostic services.
- Demonstrate appropriate communication skills with patients and colleagues.
- Act in a professional and ethical manner.
- Facilitate communication and education to elicit patient cooperation and understanding of expectations and respond to questions regarding the sonographic examination.

ORGANIZATIONAL STRUCTURE

The Sanford Medical Center Fargo Sonography Program faculty consists of the Program Director, Echocardiography Concentration Coordinator, Clinical Coordinators, Faculty, and Medical Advisors. Clinical instruction is provided by qualified registered diagnostic sonographers employed by Sanford Health.

The Advisory Committee meets annually to provide guidance to assist program and sponsor personnel in formulating and periodically revising appropriate goals and learning domains, curriculum effectiveness, monitoring expectations and program outcomes, and ensuring program responsiveness to change. Committee members include students, graduates, faculty, sponsor administration, employers, physicians, and the public.

Student representatives are provided with meeting documents for review. The documents are confidential and are not to be shared. Student representatives are encouraged to participate in Advisory Committee meetings to best represent their student colleagues. Following the meetings, the student representatives are to consult with the Program Director on appropriate information to share with their student colleagues.

PROGRAM CERTIFICATE OF COMPLETION

The Sanford Medical Center Fargo Sonography Program is a hospital-based program, issuing a certificate upon successful completion. This certificate acknowledges that the student has completed all required coursework and clinical experiences and has completed competency requirements. Following completion of requirements, students are eligible to sit for national registry exams to become registered diagnostic sonographers upon graduation.

The Sanford Medical Center Fargo Sonography Program is affiliated with North Dakota State University (NDSU). Upon successful completion of all coursework requirements and the 21-month program, NDSU students will graduate with a Bachelor of Science Degree in Radiologic Sciences with a sub-plan of Diagnostic Medical Sonography or Echocardiography.

ACCREDITATION

The Sanford Medical Center Fargo Sonography Program is accredited in abdominal-extended, obstetrics and gynecology, vascular, and adult cardiac sonography through the Commission on Accreditation of Allied Health Education Programs (CAAHEP) upon the recommendation of the Joint Review Committee on Education in Diagnostic Medical Sonography (JRC-DMS). CAAHEP is the only organization recognized by the U.S. Department of Education to evaluate and accredit educational programs in sonography. This accreditation ensures that the program meets educational standards and provides students the opportunity to take national registry exams upon completion.

Sanford Medical Center Fargo is accredited by the Joint Commission and the American College of Radiology. North Dakota State University is accredited through the Higher Learning Commission.

CERTIFICATION

The American Registry for Diagnostic Medical Sonography (ARDMS) is recognized as the international standard in sonography credentialing. ARDMS grants certification in the following subspecialties: abdomen, obstetrics and gynecology, musculoskeletal, breast, pediatric sonography, registered vascular technology, adult echocardiography, fetal echocardiography, and pediatric echocardiography. Credentialed sonographers work in hospitals, outpatient clinics, private physician offices, mobile services, educational programs, and with equipment manufacturers. Registered sonographers must obtain Continuing Medical Education (CME) credits regularly and remain in good standing with ARDMS to maintain their credentials.

Certification is achieved by taking the Sonography Principles and Instrumentation examination and boards for each specialty to become a Registered Diagnostic Cardiac Sonographer (RDCS), Registered Diagnostic Medical Sonographer (RDMS), and/or Registered Vascular Technologist (RVT). Students will be academically prepared to take the following certification examinations for their sub-plan:

| | |
|--|---|
| Echocardiography (RDCS) Sonography Principles and Instrumentation + Adult Echocardiography = RDCS (AE) | Diagnostic Medical Sonography (RDMS) Sonography Principles and Instrumentation + Abdomen = RDMS (AB) OB/GYN = RDMS (OB/GYN) Vascular Technology = RVT |
|--|---|

ACADEMIC CALENDAR 2024-2026

| Fall | 2024 | Fall | 2025 |
|----------------------|------------------|--------------------------|----------------|
| Term Begins | August 12 | Term Begins | August 25 |
| Labor Day Holiday | September 2 | Labor Day Holiday | September 1 |
| Thanksgiving Holiday | November 28-29 | Thanksgiving Holiday | November 27-28 |
| Term Ends | December 13 | Term Ends | December 12 |
| Spring | 2025 | Spring | 2025 |
| Term Begins | January 6 | Term Begins | January 5 |
| Spring Break | March 10-14 | Spring Break | March 9-13 |
| Term Ends | May 9 | | |
| Summer | 2025 | | |
| Term Begins | May 12 | Class of 2025 Graduation | May 16, 2025 |
| Memorial Day Holiday | May 26 | Class of 2026 Graduation | May 15, 2026 |
| Summer Break | June 30 – July 4 | | |
| Term Ends | August 22 | | |

CURRICULUM

The Sonography Program offers a focused track of study in either adult cardiac sonography or diagnostic medical sonography which includes abdominal-extended, obstetrics and gynecology, and vascular sonography. Each concentration consists of 21 months of didactic, laboratory, and clinical training. Curriculum design provides a collegiate level program of sonographic education that adheres to the National Educational Curriculum guidelines and a clearly defined set of objectives and outcomes that meet and exceed the standards for an accredited program. Sonography Program students are scheduled full-time, requiring a 40 hour per week commitment.

The three major components to the curriculum are didactic, laboratory, and clinical instruction. Students are taught concepts, techniques, and protocols in the classroom setting. Laboratory time is provided for the student to develop proficiency in related procedures for which competency will be assessed during clinical rotations and during graded scanning labs.

Students are provided with syllabi that include course description, objectives, methods of evaluation, topic outlines, and competencies required for graduation. The instructor will explain the grading policies for each course in initial class meetings. Laboratory time is in sequence with classroom instruction to allow students to develop and demonstrate proficiency in techniques and procedures. Students will be provided with objectives for each clinical rotation. Clinical rotations provide students with the opportunity to gain experience in patient care under the supervision of a clinical preceptor. Competencies in specific procedures are required during clinical rotations. Clinical exam records are documented in Trajecsyst and include level of scanning participation, length of exam, clinical performance, and completed competencies.

| | |
|--------------------------------------|---|
| Echocardiography - 60 credits | Diagnostic Medical Sonography - 60 credits |
| Didactic Instruction: 24 credits | Didactic Instruction: 27 credits |
| Scanning Lab: 10 credits | Scanning Lab: 6 credits |
| Clinical Training: 26 credits | Clinical Training: 27 credits |

Completed hours may vary due to weather-related cancellations or approved student time off.

Students are provided with lesson plans and course syllabi that include course descriptions, credits, objectives, grading scales, assignments, and course schedules.

Students are expected to take ownership and responsibility for their own professional education through self-directed learning. The program provides resources to meet all curriculum objectives. However, students must strive to expand the boundaries of the curriculum by seeking additional resources to enhance knowledge.

Students are required to participate in professional development through journal article assignments, Professional Growth coursework, attendance at the Midwest Society of Diagnostic Ultrasound conference, and case conference presentations. Presentations may be scheduled outside of the assigned class or clinical hours. This practice is parallel to obtaining continuing medical education required to maintain professional certification.

Program Effectiveness

The Sanford Sonography Program operates under the principle of outcome orientated education. This means that all resources and outcomes are continually evaluated as to their effectiveness in allowing the Program to reach its goal of producing competent sonographers.

Students are active in Program evaluation and complete the following:

- 1) Course and Instructor Evaluations
- 2) Laboratory Evaluation
- 3) Clinical Instructor Evaluations
- 4) Exit Evaluation – Medical Advisor, Facility, Laboratory, Library, Clinical Resources and Physician Input
- 5) Graduate Competency Survey (6-12 months following graduation)

The Program and its resources are also evaluated by faculty, clinical instructors, medical advisors, advisory committee members, and graduate employers. Additionally, outcomes are measured by monitoring student retention, job placement, and credentialing success rates. An annual report is compiled and used for Program improvement. Program outcomes are publicly available on the [Program website](#).

ECHOCARDIOGRAPHY COURSE DESCRIPTIONS

Term I

Foundations of Echocardiography - 2 credits

The intent of this course is to provide an introduction to the field of echocardiography. This course will provide students with knowledge of two-dimensional imaging, spectral Doppler, color Doppler and transducer placement. The students will also be instructed in patient care, basic instrumentation and ultrasound physics, medical terminology, and medical ethics. This course provides an orientation to clinical aspects of medical imaging in a hospital environment.

Cardiovascular Anatomy and Physiology - 2 credits

This course will provide knowledge on basic anatomical terminology, anatomy of the heart, and anatomy of the thoracic cavity. Information covered will include position and orientation terminology, basics of circulatory physiology, hemodynamics, the cardiac cycle, and pathophysiology.

Vascular Sonography I - 2 credits

This course covers the basic principles of hemodynamics, waveform analysis, and terminology. Equipment operation and techniques in imaging and non-imaging vascular studies will be covered along with hemodynamics, anatomy, physiology, and pathology of the carotid arteries and transcranial Doppler. This course is accompanied by a scanning lab to provide the skills necessary for proper sonographic technique.

Scanning Lab I - 3 credits

The intent of this course is to provide hands on learning for how to perform portions of a routine two-dimensional and Doppler echocardiogram. Scanning labs will prepare students for their clinical experience by teaching them how to obtain echocardiographic views, interrogate those views with color and spectral Doppler, and make accurate measurements. Competency testing will be completed in scanning labs.

Echocardiography Clinical Practicum I - 4 credits

The purpose of this course is to provide students with the opportunity to perform portions of an echocardiogram. Students will apply skills and knowledge learned in didactic coursework and scanning lab to the clinical setting. This clinical experience will help the students become familiar with clinical sites and medical imaging. In the clinical environment, students will be directly supervised by registered cardiac sonographers.

Term II

Adult Echocardiography I - 2 credits

The intent of this course is to provide necessary education on coronary artery disease and cardiomyopathies such as dilated cardiomyopathy, hypertrophic cardiomyopathy, restrictive cardiomyopathy, arrhythmogenic right ventricular cardiomyopathy, and unclassified types. Associated clinical presentation, two-dimensional, M-mode, and Doppler findings will be discussed.

Adult Echocardiography II - 2 credits

The intent of this course is to provide the student with the necessary knowledge of valvular heart disease including the echocardiographic assessment of cardiac valves using two-dimensional, M-mode, color Doppler, and spectral Doppler. Surgical intervention and post-operative assessment of valvular heart disease will be discussed. This course will also cover the necessary knowledge and skills to do a complete hemodynamic and Doppler assessment of diastolic function.

Adult Echocardiography III - 2 credits

This course will provide the necessary knowledge on cardiac disease related to systemic illness, pericardial diseases, cardiac masses, and diseases of the great vessels. The students will learn the echocardiographic assessment of these conditions by two-dimensional, M-mode, and Doppler techniques.

Scanning Lab II - 4 credits

The intent of this course is to provide hands-on learning on how to perform a routine echocardiogram to include specific pathology protocols. Scanning Lab II will build on previous learning experience and include instruction on how to obtain echocardiographic views, and how to interrogate those views with color and spectral Doppler and make accurate measurements. Competency testing will be completed in scanning labs.

Echocardiography Clinical Practicum II - 4 credits

This course will continue the clinical rotation in cardiac imaging. Student participation focuses on cognitive, affective, and psychomotor skills in patient care and assessment. Students will apply knowledge to perform routine echocardiographic examinations including two-dimensional, color Doppler, and spectral Doppler. In the clinical environment, students will be directly supervised by registered cardiac sonographers.

Term III

Adult Echocardiography IV - 2 credits

The intent of this course is to provide the necessary knowledge on surgical and interventional procedures performed and related to the application of echocardiography. Topics include: pericardiocentesis, intracardiac echocardiography, 3-dimensional imaging, transesophageal echocardiography, contrast imaging echocardiography, strain rate imaging, valvuloplasty procedures, transcatheter aortic valve implantation, and mitral valve clip procedures. This course will also include a review of coronary artery disease, basic ECG and pharmacology, the different types of stress tests performed clinically, and the technical aspects of the equipment.

Pediatric and Congenital Echocardiography I - 1 credit

This course will provide the student with the basic knowledge of cardiac embryology, anatomy of congenital cardiac abnormalities, adult congenital heart disease, and patient follow-up. Students will gain an understanding of associated surgical repairs and interventional procedures. The student will also be provided information necessary to perform a systematic two-dimensional, spectral, and color flow Doppler examination on a patient with congenital heart disease.

Scanning Lab III - 2 credits

The intent of this course is to provide hands on learning and build on skills obtained in Scanning Lab I and II. Students will continue the development of skills needed to perform a complete hemodynamic and Doppler assessment. Competency testing will be completed in scanning labs.

Echocardiography Clinical Practicum III - 4 credits

This course is a competency-based clinical experience in cardiac imaging. Students will begin to integrate clinical and echocardiographic findings and identify final impressions related to the exam. Students continue all standard practices and begin to perform more complex examinations discussed in didactic courses including transesophageal, stress, contrast, three-dimensional and strain echocardiography. Students will be directly supervised by registered cardiac sonographers.

Term IV

Pediatric and Congenital Echocardiography II - 3 credits

This course will provide the student with the basic knowledge of acquired congenital pathologies, adult congenital heart disease, and patient follow-up. Students will gain an understanding of associated surgical repairs and interventional procedures. The student will also be provided information necessary to perform a systematic two-dimensional, spectral, and color flow Doppler examination on a patient with congenital heart disease.

Physics and Instrumentation I - 2 credits

Students will learn the fundamental principles of ultrasound physics. Topics will include: sound wave generation and propagation, acoustical impedance and reflection, transducer mechanics, principles of Doppler ultrasound, quality assurance, and biological and electrical safety.

Echocardiography Concepts Review - 0 credit

This course is a review of material covered in prior semesters and is intended to integrate knowledge from previous courses. Case reviews will be used as a learning method to help students demonstrate application of echocardiographic data, recognize discrepancies in data, identify important findings, and create a preliminary report. Students are responsible for developing their own case reviews which will involve classroom presentations and a professional research paper.

Echocardiography Clinical Practicum IV - 7 credits

This course is a competency-based clinical experience that strengthens the cognitive, affective, and psychomotor skill level of students in the performance of adult echocardiograms. Students will be expected to acquire a complete echocardiographic examination, interpret data, and communicate preliminary findings. Rotations will include clinic, hospital, stress, and transesophageal echocardiography. Students will be provided the opportunity for optional rotation to the pediatric echocardiography department. Students will be directly and indirectly supervised by registered cardiac sonographers.

Term V

Physics and Instrumentation II - 2 credits

This course will continue student's learning of the fundamental principles of ultrasound physics. Topics will include: sound wave generation and propagation, acoustical impedance and reflection, transducer mechanics, principles of Doppler ultrasound, quality assurance, and biological and electrical safety.

Echocardiography Registry Review - 1 credit

This course provides the student opportunities to prepare for ARDMS examinations and review concepts covered throughout the Program. Information on credentialing examinations, effective test-taking strategies, and ARDMS examination content is discussed along with review sessions and computerized review exams. The student will take computerized mock registry exams to ensure comprehension of course content.

Professional Growth and Development - 2 credits

This course will explore aspects of professionalism including professional interactions, responsibilities, sonographer scope of practice, credentialing, legal issues, interview and resume skills, and current sonographer workplace issues. Students will research, write, and give an oral presentation on a complex sonographic subject or emerging technology. Students will create a professional research poster based on research project content working in groups to be submitted for competition at the Midwest Society of Diagnostic Ultrasound (MSDU) Annual Spring Seminar.

Echocardiography Clinical Practicum V- 7 credits

Clinical Practicum V is the final clinical rotation of the Program. The student performs complex echocardiographic examinations and completes all competencies while under direct or indirect supervision by registered cardiac sonographers. Students will be expected to acquire quality echocardiographic examinations, interpret data, and communicate preliminary findings. Clinical rotations include a variety of echocardiographic examinations and procedures.

DIAGNOSTIC MEDICAL SONOGRAPHY COURSE DESCRIPTIONS

Term I

Foundations of Sonography - 2 credits

This course offers introductory foundations in sonography with an emphasis on physical principles, orientation, scan planes, terminology, ergonomics, instrumentation, structure and function of body systems, medical ethics and professional behavior. This class includes a mixture of didactic course work, scanning labs, and clinical orientation.

Abdominal Sonography I - 2 credits

This course will cover sonographic principles, anatomy, physiology, pathology, laboratory values, and basic sonographic appearance of the abdominal vessels, kidneys, adrenal glands, retroperitoneum, and spleen. This course is accompanied by a scanning lab to affirm proper technique and visualization of abdominal structures.

Gynecologic Sonography - 2 credits

This course will cover sonographic principles, gynecologic anatomy, pathophysiology, and labs. Detailed instruction is given on the following topics: pelvic anatomy and physiology, uterine, ovarian, and tubal pathology, and infertility. This course also includes scanning instruction for proper sonographic technique and visualization of gynecologic structures.

Vascular Sonography I - 2 credits

This course covers the basic principles of hemodynamics, waveform analysis, and terminology. Equipment operation and techniques in imaging and non-imaging vascular studies will be covered along with hemodynamics, anatomy, physiology, and pathology of the carotid arteries and transcranial Doppler. This course is accompanied by a scanning lab to provide the skills necessary for proper sonographic technique.

DMS Clinical Practicum I - 4 credits

This course includes clinical rotations in abdominal-extended and vascular ultrasound and provides the student with an introduction/observation in all aspects of the medical imaging department. This course contains educational objectives and learning activities directed toward aiding the student in obtaining this goal. This clinical experience will help the students become familiar with clinical sites and medical imaging. Students will be directly supervised by diagnostic medical sonographers and registered vascular technologists.

Term II

Abdominal Sonography II - 3 credits

This course will cover sonographic principles, anatomy, physiology, pathology, laboratory values, and basic sonographic appearance of the liver, gallbladder, bile ducts, and pancreas. This course is accompanied by a scanning lab to affirm proper technique and visualization of abdominal structures.

Obstetric Sonography - 3 credits

This course provides detailed instruction in embryology, normal fetal anatomy, amniotic fluid, invasive procedures, assessment of fetal age and growth restriction, placenta, umbilical cord, membranes, high-risk pregnancy, indications, and safety. The student will be able to recognize the sonographic appearance of first, second, and third trimester pregnancy. This will provide necessary information to perform and aid in interpreting normal and abnormal obstetrical ultrasound exams.

Vascular Sonography II - 3 credits

This course covers the hemodynamics, anatomy, physiology, and pathology of visceral Doppler and the lower extremity venous and arterial systems. Instruction is offered on correlation of vascular ultrasound with other modalities to determine disease. This course is accompanied by a scanning lab to affirm proper scanning technique and visualization.

DMS Clinical Practicum II - 4 credits

Student participation focuses on cognitive, affective, and psychomotor skills in patient care and assessment, and observing/performing sonographic examinations under direct supervision by diagnostic medical sonographers, and registered vascular technologists. Clinical rotations provide a variety of exams including abdominal-extended, obstetric/gynecologic, and vascular ultrasound.

Term III

Abdominal Sonography III - 1 credit

This course will cover sonographic principles, anatomy, physiology, pathology, laboratory values, and basic sonographic appearance of the gastrointestinal tract, peritoneum, abdominal wall, non-cardiac chest cavity, emergency sonography, organ transplant sonography, and emerging ultrasound technologies. Emphasis will be placed on most commonly encountered topics such as appendix, FAST scan, and transplants (renal, liver, and pancreas). This course is accompanied by a scanning lab to affirm proper technique and visualization of abdominal structures.

Vascular Sonography III - 2 credits

This course covers hemodynamics, anatomy, physiology, pathology, and scanning techniques of upper extremity arterial and venous, hemodialysis, vein mapping, and venous insufficiency exams. This course will also address test validation and quality assurance statistics.

Small Parts Sonography - 2 credits

This course covers instruction on the anatomy, pathology, physiology, laboratory values, and sonographic appearance of the thyroid/neck, breast, scrotum, and prostate. Musculoskeletal ultrasound will also be introduced. This course is accompanied by a scanning lab to affirm proper technique and visualization.

DMS Clinical Practicum III - 6 credits

This course is a competency-based clinical experience including abdominal-extended, obstetric/gynecologic, and vascular ultrasound examinations. Students continue all standard practices and begin to perform more complex examinations discussed in didactic courses. Students increase comfort level with sonography equipment and begin to complete sonographic examinations under direct supervision by registered diagnostic medical sonographers and vascular technologists.

Term IV

Physics and Instrumentation I - 2 credits

Students will learn the fundamental principles of ultrasound physics. Topics will include: sound wave generation and propagation, acoustical impedance and reflection, transducer mechanics, principles of Doppler ultrasound, quality assurance, and biological and electrical safety.

Pediatric Sonography - 2 credits

This course covers anatomy, physiology, and pathology for pediatric patients including abdominal and renal pathology, pylorus, neonatal brain, neonatal spine, and infant hips. Instruction includes imaging techniques and sonographic appearance.

Fetal Anomalies - 2 credits

This course is designed to define fetal pathologies and identify classic sonographic findings associated with cranial and neural tube defects, neck, thoracic and abdominal abnormalities, cardiac anomalies, skeletal dysplasias, and chromosomal abnormalities and syndromes.

DMS Concepts Review - 0 credit

This course provides the student opportunities to review concepts taught throughout the curriculum by completing computerized review exams and case studies prepared by Davies Publishing Company.

DMS Clinical Practicum IV - 6 credits

This course is a competency-based clinical experience that strengthens the cognitive, affective, and psychomotor skill level of students in the performance of abdominal-extended, obstetric/gynecologic, and vascular ultrasound examinations. Students continue all standard practices and perform more complex examinations discussed in didactic courses. Students complete sonographic examinations under direct or indirect supervision by diagnostic medical sonographers and registered vascular technologists.

Term V

Physics and Instrumentation II - 2 credits

This course will continue student's learning of the fundamental principles of ultrasound physics. Topics will include: sound wave generation and propagation, acoustical impedance and reflection, transducer mechanics, principles of Doppler ultrasound, quality assurance, and biological and electrical safety.

DMS Registry Review - 1 credit

This course provides the student opportunities to prepare for ARDMS examinations and review concepts covered throughout the Program. Information on credentialing examinations, effective test-taking strategies, and ARDMS examination content is discussed along with review sessions and review exams. The student will take both written and computerized mock registry exams to ensure comprehension of course content.

Professional Growth and Development - 2 credits

This course will explore aspects of professionalism including professional interactions, responsibilities, sonographer scope of practice, credentialing, legal issues, interview and resume skills, and current sonographer workplace issues. Students will research, write, and give an oral presentation on a complex sonographic subject or emerging technology. Students will create a professional research poster based on research project content working in groups to be submitted for competition at the Midwest Society of Diagnostic Ultrasound (MSDU) Annual Spring Seminar.

DMS Clinical Practicum V - 7 credits

Clinical Practicum V is the final clinical rotation of the Program. The student performs complex sonography examinations and completes all competencies while under direct or indirect supervision by registered diagnostic medical sonographers and vascular technologists. Clinical rotations include a variety of abdominal-extended, obstetric/gynecologic, and vascular ultrasound examinations.

ADMISSIONS AND ACCEPTANCE

Admissions Policy Statement

The Sonography Program provides equal treatment for all applicants without regard to race, creed, religion, national origin, sex, sexual orientation, gender identity, age, familial status, military/veteran status, or any other status protected by applicable local, state, or federal law; provided that the applicant meets the qualifications as set forth by the Sonography Program. Sanford is committed to actively supporting an environment which provides qualified applicants with equal opportunity on a nondiscriminatory basis.

Admissions Qualifications / Selection

To be eligible for admission, students must have a high school diploma or its equivalent, complete all prerequisite college courses, earn a minimum core and cumulative grade point average of 3.0, achieve grades of "C" or better in all courses used to fulfill major and degree requirements, meet program-designated technical standards or requested reasonable accommodations, and comply with criminal background and student conduct requirements. Admission decisions include a review of high school performance, ACT score, college performance, references, work experience, interview scores, and an entrance examination. Informational sessions are available for prospective students prior to the application deadline.

At times, admission may be offered to an applicant on a conditional basis. In the acceptance letter, the applicant will be notified of requirements that need to be met prior to the Program start date. Failure to successfully complete any of these requirements will result in forfeiture of their position in the Sonography Program. Academic deficiency at affiliated universities will jeopardize a student's continued enrollment in the Sonography Program.

External Coursework

No external classes may be taken during the Program, unless prior approval is granted by the Program Director.

Acceptance Fee

Upon notification of admission, students will be sent an acceptance agreement which requires a nonrefundable \$200 acceptance fee to reserve their placement in the program. This acceptance fee will be applied toward the Sonography Program student fees. Applicants are informed of Sonography Program student fees during informational meetings and prior to acceptance to the program.

Basic Life Support/Cardiopulmonary Resuscitation Certification

Students are required to be certified in Basic Life Support through the American Heart Association or American Red Cross during the Program. Prior to the start of clinical rotations, students must provide evidence of certification to the Sanford Sonography Program.

Criminal Background Check

Criminal background checks are completed in accordance with [NDSU CHP Policy 3.08](#). The national certification organization (ARDMS) provides a [Pre-Application Determination of Eligibility for ARDMS Certification: Criminal Matters form](#) to verify eligibility of applicants who have a history of criminal charges. Pre-application verification for certification test eligibility is the sole responsibility of the candidate and/or student prior to and during participation in the Sonography Program. Applicants who have questions regarding how these issues may affect ability to earn certification credentials or obtain employment in the profession should discuss this matter with a Program official prior to beginning the Program.

Student Health

The Sonography Program encourages students to make choices that promote and safeguard their mental and physical health. Optimal health and well-being require proper physiologic care in nutrition, sleep, relaxation, and exercise. To expect optimal learning performance, students must take responsibility to practice a prudent lifestyle. If a student is ill, staying home to avoid exposing patients and coworkers is expected per Sanford policy.

Students are required to carry medical insurance throughout the Program and are responsible for full payment of all hospital, emergency room visits, walk-in clinic visits, and physical examinations. Proof of insurance is required prior to start date. Vaccinations are required for all Sanford employees and students. Exemptions must be submitted annually.

If accepted into the Program, an e-mail will be sent to each student requesting the following:

- 1) HIPAA training
- 2) Immunization verification form, which includes proof of immunity to measles, mumps, rubella and varicella (chicken pox) through either vaccination or a titer
- 3) Documentation of TB test results that are dated within 1 year prior to start date
- 4) Student orientation to Sanford policies and procedures

Documentation must be submitted by the deadline provided.

Professional Liability Insurance

Students are required to have professional liability insurance. NDSU students are covered by the NDSU student professional liability policy.

Professional Membership

Application for student membership of the Society of Diagnostic Medical Sonography (SDMS) or American Society of Echocardiography (ASE) will be completed during the Program. Cost is included in Sonography Program student fees.

State Licensure

Students must perform clinical work under the supervision of a licensed diagnostic sonographer and do not need an individual license to complete the requirements of the Program. Students who begin working as a diagnostic sonographer in the state of North Dakota will need to obtain licensure through the state prior to employment. Visit the North Dakota Medical Imaging and Radiation Therapy (NDMIRT) [website](#) for additional details.

Student Pictures

Photos of students will be posted electronically and in the imaging departments to assist staff and instructors in identification of students. Additional photos taken may be used for Program advertisement or recruitment efforts. A photo permission waiver will be provided during Program orientation.

Technical Standards and Accommodations for Equal Opportunity

Technical standards are utilized to identify which students will need assistance in performing tasks and to identify students who would be unable to perform the job of a sonographer prior to Program entry. Sanford does not discriminate against any qualified applicant because of a disability or perceived disability. Qualified applicants must be able to perform the essential job functions with or without reasonable accommodation provided that the accommodation does not create an undue hardship on Sanford. The determination as to whether to provide accommodation, or whether a particular accommodation is reasonable, is made by Sanford on a case-by-case basis, in accordance with applicable law.

Physical, motor and tactile requirements

- Stand and walk for extended periods of time
- Mobility and strength to assist in patient transfers and position changes
- Move (push and/or pull) and carry equipment for use in patient care areas
- Perform multiple motor tasks simultaneously
- Possess fine motor skills, manual dexterity, and steady arm/hand movements to obtain diagnostic images

Visual acuity requirements

- Monitor and assess patients and equipment function
- Read written and printed words, fine print and digital displays
- Recognize and image normal and abnormal anatomy utilizing sonographic equipment in low light
- Differentiate colors and shades of gray

Speaking and hearing requirements

- Communicate effectively with patients and personnel, both face-to-face and by phone
- Hear and understand patients, visitors, and healthcare personnel
- Hear audible alarms and audio signals produced by spectral Doppler
- Obtain accurate patient blood pressure with stethoscope and continuous-wave Doppler equipment

Interactive requirements

- Follow written and oral instructions
- Comply with institutional dress code, including specific dress requirements of unique patient care units (i.e., surgical attire in the operating room, short sleeves in the NICU, etc.)
- Comply with infection prevention strategies (hand hygiene, personal protective equipment, and isolation)
- Exhibit empathy, compassion, integrity, and concern for patients, visitors, and healthcare personnel
- Accept constructive criticism and implement suggestions to improve performance
- Maintain patient confidentiality, honesty, and ethical standards
- Manage time, organize workload, and meet deadlines
- Exercise good judgment in responding to emergent situations
- Function effectively in high-stress environments

FINANCIAL POLICIES

Financial Aid

Sanford Health does not provide financial aid assistance. Financial aid information may be obtained from the [NDSU Student Financial Services Office](#). Students may be eligible for financial aid at NDSU during the Program.

Remuneration

This is not a paid Program. Students cannot receive remuneration for any time completed during the Program. Students may not accept donations of money or other in-kind gifts from patients or vendors. The student is expected to return any gift or gratuity to the patient or vendor and indicate that Sanford Health policy precludes acceptance. If the patient or vendor refuses to take back the gratuity or gift, the student is to inform the patient or vendor that the gift will be donated to the Sanford Health Foundation in their name and the Foundation will provide them with appropriate documentation.

Tuition and Student Fee Summary

For the duration of the Program, students enrolled in course credit at NDSU will pay student fees and tuition at their regular resident rate to NDSU. NDSU tuition and fee rates are detailed at [OneStop](#). In addition, students will pay a tuition fee of \$2,000 directly to Sanford Health. The Sanford student fees offset the Program costs for student resources, lab supplies, mock board exams, professional memberships, and graduation expenses. Sanford Health Accounts Payable Department will invoice each student for student fee payment. Sanford student fees must be paid in full by September 30th of the acceptance year. Failure to pay in full by the deadline may result in forfeiture of the position within the Program. Sanford student fees are non-refundable. Books required for the Program are listed by the Program faculty and must be purchased by the student.

Costs Incurred by Student (not included in Tuition/Fees)

Books: \$600-800

Scrubs: \$100-200

Midwest Society of Diagnostic Ultrasound Annual Conference attendance: meals, mileage, etc.

ARDMS Board Examinations: \$250 SPI exam + \$275 for each specialty board exam

ND State License Fees: conditional license for new graduates \$175

Withdrawal and Refund

There is no refund for any fees paid directly to the Sanford Medical Center Fargo Sonography Program. Withdrawal and refund of tuition at NDSU will be in accordance with published dates and deadlines. Upon withdrawal, the ID, parking permit, pager, and RTLS badge are to be returned to the Program Director and computer access will be revoked immediately.

CONTACT INFORMATION

Sanford Medical Center Fargo Sonography Program

Hofer Radiology Education Center

3148 Fiechtner Drive South

Fargo, ND 58103

701-234-6340

SonographyProgram@SanfordHealth.org

Accrediting Agencies



Commission on Accreditation of Allied Health Education Programs

9355 113th St N, #7709

Seminole, FL 33775

727-210-2350

www.caahep.org

| | | | |
|---------------------|--|--|---|
| Sponsor: | Sanford Medical Center Fargo | Sanford Medical Center Fargo | North Dakota State University |
| Accrediting Agency: | The Joint Commission | American College of Radiology | Higher Learning Commission |
| Mailing Address: | One Renaissance Blvd. Oakbrook Terrace, IL 60181 <i>Washington DC Office</i> 601 13th Street, NW Suite 560 South Washington, DC 20005 | <i>Headquarters Office</i> 1891 Preston White Dr. Reston, VA 20191 | 230 South LaSalle Street Suite 7-500 Chicago, Illinois 60604-1411 |
| Website Address: | www.jointcommission.org/ | https://www.acr.org/ | https://www.hlcommission.org/ |
| Phone Number: | 630-792-5800 | 703-648-8900 | 800-621-7440 |