

COURSE DESCRIPTIONS

All prerequisite coursework required for acceptance and entry into the program must be completed. Prerequisite requirements listed below refer to Sonography Program courses.

Semester One – 13 credits

SONO 3011- Foundations of Sonography (3 credits)

This introductory course provides the skills and knowledge necessary to begin a clinical rotation in an ultrasound department. Students will receive lectures and participate in lab exercises to help them understand basic anatomy, physics, instrumentation, ultrasound terminology, scanning techniques, image orientation, film labeling, and scanner controls.

Prerequisite(s): None

SONO 3111- Abdomen I Sonography (2 credits)

This course presents the anatomy, physiology, laboratory values, pathology, and sonographic appearances of the abdominal vessels, kidneys, and spleen. Scanning labs allow abdominal scanning practice in a controlled environment.

Prerequisite(s): Foundations of Sonography

SONO 3121- Cross Sectional Abdomen (1 credit)

Abdominal and pelvic anatomical structures in cross-sectional imaging studies are the focus of this online class. After reviewing anatomical structures using standard anatomy illustrations, the corresponding Ultrasound, CT and MRI planar images will be demonstrated with a focus on location and spatial relationships to each other.

Prerequisite(s): Foundations of Sonography

SONO 3201- Gynecologic (GYN) Sonography (2 credits)

Gyn Sonography is the first course of the obstetrics and gynecology (OB/Gyn) curriculum. Topics include the following: female pelvic anatomy and physiology, uterine, ovarian, and tubal pathology, infertility, and pelvic sonographic scanning techniques, including normal and abnormal sonographic findings.

Prerequisite(s): Foundations of Sonography

SONO 3311-Vascular Technology I (2 credits)

Vascular I is the first course of the Vascular curriculum. This course provides the student with basic knowledge of the physics of duplex ultrasound imaging, Doppler concepts, and machine instrumentation to prepare the student to perform carotid duplex exams and transcranial Doppler exams and identify normal and abnormal anatomy and physiology of the carotid system.

Prerequisite(s): Foundations of Sonography

SONO 3301 – Clinical Practicum I (3 credits)

Clinical Practicum I includes clinical rotations through the following ultrasound areas: General imaging (abdomen, superficial, Gyn), Vascular, Obstetrics and simulations. Students will observe, scan, and apply knowledge obtained during didactic coursework and scanning labs. Students will be directly supervised.

Prerequisite: Foundations of Sonography

Semester Two – 13 credits

SONO 3112 – Abdomen II Sonography (3 credits)

This course consists of lectures and scanning labs to help students learn the anatomy, physiology, laboratory values, pathology, and sonographic appearances and scanning techniques for the liver, biliary tree and pancreas.

Prerequisite(s): Foundations of Sonography

SONO 3401- Obstetrics (OB) Sonography (2 credits)

Performance and interpretation of normal and abnormal obstetrical sonograms is the focus of the OB Sonography course. The following topics will be presented: embryology, first trimester sonography, normal fetal anatomy, amniotic fluid, invasive procedures, assessment of fetal age and growth restriction, placenta, cord, membranes, high-risk pregnancy, indications and safety.

Prerequisite(s): Foundations of Sonography

SONO 3312 – Vascular Technology II (3 credits)

The student will learn the basic knowledge and skills necessary to perform duplex imaging of the abdominal arteries, lower extremity arteries and veins, and non-imaging testing of the peripheral vessels. Lectures and scanning labs include anatomy, pathophysiology, treatment, and testing techniques (including non-imaging vascular testing) for upper and lower extremity veins and arteries.

Prerequisite: Vascular I

SONO 3302 – Clinical Practicum II (5 credits)

This course is a 17-week clinical rotation in the following ultrasound areas: General, Vascular, Obstetrics, and simulations. Students will learn through observation, scanning, and application of knowledge obtained during didactic coursework and scanning labs. Students will be directly supervised.

Prerequisite: Clinical Practicum I

Semester Three – 13 credits

SONO 4301 – Fetal Anomalies (2 credits)

The Fetal Anomalies course prepares students to define fetal pathologies and identify classic sonographic findings associated with cranial, thoracic, neck, GI, GU, skeletal, cardiac, and chromosomal fetal anomalies.

Prerequisite: Obstetrical Sonography

SONO 3313- Vascular Technology III (1 credit)

Anatomy, pathology, treatment, indications, and scanning techniques necessary to perform duplex imaging exams of upper extremity arteries & veins, dialysis grafts & mapping, lower extremity venous insufficiency & perforator veins, and upper & lower extremity venous mapping are the focus of this class. Test validation and QA statistics will also be introduced.

Prerequisites: Vascular I and II

SONO 3503 – Superficial Sonography ((2 credits)

The sonographic appearance and anatomy, physiology, laboratory values, pathology of the breast, neck, prostate and scrotum are presented in this class. Musculoskeletal sonography will also be introduced. Review of scanning protocols and scanning practice will be conducted in scanning labs.

Prerequisite(s): Foundations of Sonography

SONO 3403- Concepts Review (2 credits)

The student will review concepts taught throughout the 21 months by completing computerized review exams prepared by Davies Publishing Company during Semesters 2, 3, & 4.

Prerequisite(s): Foundations of Sonography

SONO 4303 – Clinical Practicum III (6 credits)

This course is a 15-week clinical rotation in the following ultrasound areas: General, Vascular, Obstetrics, Vascular Testing Lab, and affiliate rotations. Students will learn through observation, scanning, and application of knowledge obtained during didactic coursework and scanning labs. Students will be indirectly supervised at the discretion of the Clinical Instructor.

Prerequisites: Clinical Practicums I and II

Semester Four – 13 credits

SONO 4111- Ultrasound Physics I (2 credits)

This course provides the student with a general overview of diagnostic pulse-echo ultrasound imaging devices, basic mathematical concepts, and knowledge of the basic physics of ultrasound and its interaction with tissue.

Prerequisite(s): Foundations of Sonography

SONO 4201 – Pediatric Sonography (1 credit)

The focus of this course is the anatomy of the neonatal brain and the pathologies that can be detected sonographically. Other topics include: pediatric renal/urinary tract disease, pediatric abdominal masses and neonatal hips and spine.

Prerequisite(s): Foundations of Sonography

SONO 3113 – Abdomen III Sonography (2 credits)

This predominantly Brightspace course will present the anatomy, pathophysiology, laboratory values, and sonographic appearances of the GI tract, retroperitoneum, peritoneum, chest cavity, abdominal wall, as well as emergency sonography, transplant sonography and interventional applications. Emphasis and practical application will be placed on topics most commonly encountered in a typical sonography department such as appendix, FAST Scan, hypertrophic pyloric stenosis, renal-pancreas, and liver transplant and ultrasound guided sterile procedures.

Prerequisites: Abdomen Sonography I and II

SONO 4501 – Research and Project I (1 credit)

Working in groups, students collaborate and prepare a research paper on emerging technologies in sonography.

Prerequisite(s): Foundations of Sonography

SONO 4401 – Clinical Practicum IV (7 credits)

This course is a 17-week clinical rotation in the following clinical areas: General, Vascular, Obstetrics, Vascular Testing Lab, Neurovascular Lab, and Breast Imaging. Students will learn through observation, scanning, and application of knowledge obtained during didactic coursework and scanning labs. Students will be indirectly supervised at the discretion of the Clinical Instructor.

Prerequisites: Clinical Practicums I and II

Semester Five – 13 credits

SONO 4112 – Ultrasound Physics II (2 credits)

Students will participate in an in-depth study of the physics and technology of diagnostic pulse-echo B-mode ultrasound imaging devices.

Prerequisite: Ultrasound Physics I

SONO 4502 - Research & Publication II (1 credit)

Students continue their exploration of emerging technologies in sonography through the completion of a professional poster to be submitted for competition at the Minnesota Society of Diagnostic Ultrasound (MSDU) Annual Spring Seminar.

Prerequisite: Research & Project I

SONO 4802 - Mock Exams (1 credit)

Through a series of course reviews, mock registry examinations and information sessions, students are able to prepare for ARDMS examinations. Information on credentialing examinations, effective test-taking strategies, and ARDMS examination content are also provided. Students will be required to apply for and take the ARDMS Physics and Instrumentation board examination during the last part of Semester 5

Prerequisites: Abdomen I & II, Gyn, OB, Fetal Anomalies, Vascular I & II

SONO 4602 – Professional Growth and Development (1 credit)

This online course provides resources and a discussion forum to explore the many aspects of professionalism including: professional interactions, professional responsibilities, sonographer scope of practice, clinical practice standards, ARDMS credentialing requirements, legal issues, sonography lab expenses, interviewing and resume skills, and current sonographer and health-care issues.

Prerequisite(s): Foundations of Sonography

SONO 4402 Clinical Practicum V (8 credits)

The final semester of the program includes clinical rotations allowing scanning experience in the following categories: General, Vascular, Obstetrics, Vascular Testing Lab, and selected specialty areas. Students will also have the opportunity for rotations to Mayo Clinic Health System sites in southern Minnesota or Wisconsin. Students will be indirectly supervised at the discretion of the Clinical Instructor

Prerequisites: Clinical Practicums I and II