

Diagnostic Medical Sonography Core Course Descriptions

Term 1 – 12 credit hours

SON 1000 Introduction to Sonography 3cr

This course presents the fundamental concepts, proficiencies, and methods related to providing high-quality patient care. It underscores the importance of medical terminology, ethical and legal aspects, sterilization practices, ergonomics, patient transfers, patient care methods, emergent situations, and the historical evolution of the role of the sonographer. Students will showcase their aptitude for making well-informed clinical assessments through hands-on scanning, executing patient care responsibilities, and displaying oral competency.

SON 1113 Sonographic Cross-Sectional Anatomy 2cr

The primary objective of this course is to equip sonography students with the ability to discern internal structures such as vital organs and vascular systems that are integral to the field of sonography. This entails understanding their positioning, interconnections, and visual characteristics. To achieve this, students will expand upon their foundational understanding of gross anatomy, honing their ability to identify cross-sectional anatomical features. Additionally, the curriculum will encompass sonographic scanning protocols and medical terminology specific to the anatomical structures under examination. The course aims to strengthen anatomical recognition and develop understanding of pathology.

SON 1211 Medical Sonographic Physics I 3cr

This course is designed to present the sonography student with detailed explanations of ultrasound physics and its application. Students will learn about ultrasound instrumentation, image artifacts, biologic effects, and quality control. Explores Doppler principles and applications, basic types of equipment and image optimization.

SON 1111 Abdominal Sonography I 3cr

The objective of this course is to provide students with a comprehensive grasp of the structure, function, and disorders pertaining to the abdominal aorta, pancreas, biliary system, and liver. Emphasis will be placed on sonographic features and characteristics of normal anatomy as well as the various disease processes that affect each organ. The course will incorporate clinical and diagnostic protocols, both general and specific to individual organs, enhancing the overall understanding of these subjects.

Prerequisites: SON 1000, SON 1113, SON 1211

Corequisite: SON 1111L

SON 1111L Abdominal Sonography I Lab 1cr

This course provides a laboratory environment for the student to work with ultrasound equipment to develop the skills necessary to perform abdominal exams. Students will practice scanning techniques, protocols, image optimization, patient positioning, technical impression worksheets, terminology, and mock physician presentations for each organ covered including abdominal aorta, pancreas, biliary system, and liver.

Prerequisites: SON 1000, SON 1113, SON 1211

Corequisite: SON 1111

Term 2 – 13 credit hours

SON 1121 OB/GYN Sonography I 3cr

The objective of this course is to provide students with comprehensive insights into the structure, function, and anomalies of the non-gravid female pelvis, along with the typical and atypical sonographic appearances. Additionally, the course serves as an introduction to the initial stage of pregnancy, encompassing embryonic growth, pertinent anatomical and physiological aspects, as well as potential complications for both the mother and embryo/fetus. Topics to be covered include embryology, early fetal progression, the ability to sonographically detect and visualize the embryo and fetus, as well as the utilization of transabdominal and transvaginal scanning techniques.

Prerequisites: SON 1000, SON 1113, SON 1211

SON 1150 Neurosonology/Superficial Structures 2cr

The objective of this course is to equip students with an understanding of the anatomy, physiology and pathological aspects of superficial anatomical structures. Attention will be devoted to the sonographic attributes and qualities of healthy anatomical structures, as well as the diverse disease processes that can impact each organ. The course content will encompass examinations of the thyroid, breast, testicle, prostate, neonatal spine, chest wall, in addition to addressing the structures related to the brain of premature infants and potential pathological conditions associated with premature birth.

Prerequisites: SON 1000, SON 1113, SON 1211

Corequisites: SON 1150L

SON 1150L Neurosonology/Superficial Structures Lab 1cr

This course offers a hands-on setting where students will use ultrasound to refine the competencies required for conducting sonographic assessments of the thyroid, breast, testicle, prostate, neonatal spine, chest wall, and neonatal head. Participants will gain experience in ultrasound scanning methods, procedural guidelines, image enhancement, patient positioning, technical assessment forms, medical terminology, and simulated physician discussions. Attention will be given to the unique requirements associated with each protocol.

Prerequisites: SON 1000, SON 1113, SON 1211

Corequisites: SON 1150

SON 1112 Abdominal Sonography II 3cr

Building upon the foundation laid in Abdominal I, this course aims to further enrich students' comprehension of the structure, function, and anomalies within the vascular systems of the liver, urogenital region, adrenal glands, spleen, gastrointestinal tract, and pediatric abdomen. The characteristics of normal and diseased anatomy of each organ will be discussed. Additionally, students will learn related clinical procedures and other diagnostic exams for each organ.

Prerequisites: SON 1000, SON 1113, SON 1211, SON 1111, SON 1111L

Corequisites: SON 1112L

SON 1112L Abdominal Sonography II Lab 1cr

This course provides an in-depth laboratory environment for the student to continue developing skills necessary to prepare for performing diagnostic exams in the clinical environment. Students will practice scanning techniques, protocols, image optimization, patient positioning, technical impression worksheets, terminology, and mock physician presentations for each organ covered including urogenital system, adrenal glands, spleen, GI tract and the pediatric abdomen.

Prerequisites: SON 1000, SON 1113, SON 1211, SON 1111, SON 1111L

Corequisites: SON 1112

SON 1804 Clinical Education I 3cr

This course continues to build on clinical instruction in abdominal, obstetric, gynecologic, and vascular scanning protocols. Patient care, the role and duties of the sonographer in the health care environment and instruction in the use of various types of ultrasound equipment will be discussed. Students receive instruction and guidance in producing quality sonographic images and the parameters used to evaluate the images throughout their clinical rotations. This course requires the student to spend two days a week in an approved ultrasound department. Students will perform a variety of exams and procedures under the supervision of the designated clinical instructor. Students are given specific learning objectives for the rotation. Progress is evaluated according to a competency-based clinical education system.

Prerequisites: SON 1000, SON 1113, SON 1211, SON 1111, SON 1111L

Term 3 – 13 credit hours

SON 2122 OB/Gyn Sonography II 3cr

The primary objective of this course is to guide students to a comprehensive understanding of the anatomy, physiology and pathology of the gravid female pelvis and correlate the typical and atypical sonographic presentation. Moreover, this course serves as an introduction to the middle and final stages of pregnancy, encompassing fetal growth and development, pertinent anatomical and physiological aspects, and potential complications for both the expectant mother and the fetus. Key topics to be addressed include sonographic recognition and visualization of the developing fetus, fetal measurements, and the management of obstetric patients.

Prerequisites: SON 1000, SON 1113, SON 1211, SON 1121

Corequisites: SON 2122L

SON 2122L OB/GYN Sonography II Lab 1cr

This course provides an in-depth laboratory environment for students to develop scanning skills and protocols as related to the second and third trimester obstetric patient. Students will practice scanning techniques, protocols, fetal biometrics, identification of normal fetal anatomy, in the level one second and third trimester exam.

Prerequisites: SON 1000, SON 1113, SON 1211, SON 1121

Corequisites: SON 2122

SON 2171 Vascular Sonography I 3cr

This course initiates the exploration of peripheral vascular, neck, and head blood flow assessment. The focus of this course centers on the principles, rationale, practical application, execution, and interpretation of ultrasound in the context of carotid, transcranial, and venous examinations. Normal and abnormal anatomy and hemodynamics will be discussed. Students will interpret normal and aberrant color flow patterns, spectral Doppler flow characteristics, with an emphasis on the velocity criteria. Furthermore, students will be introduced to surgical interventions within this context. Students will review the physics and instrumentation aspects of Doppler ultrasound, contrast normal and pathologic hemodynamics, and gain proficiency in the protocols and diagnostic criteria associated with cerebrovascular evaluations.

Prerequisites: SON 1000, SON 1113, SON 1211

Corequisites: SON 2171L

SON 2171L Vascular Sonography I Lab 1cr

This course provides a laboratory environment for the student to gain skills in the use of fundamental ultrasonic equipment designed to detect blood flow in cerebrovascular arteries as well as the veins of the upper and lower extremity. Students will be taught scanning protocols for the carotid duplex exam, lower and upper extremity venous. Focus will be on image optimization, identification of normal anatomy, demonstration of physics principles and patient positioning.

Prerequisites: SON 1000, SON 1113, SON 1211

Corequisites: SON 2171

SON 2814 Clinical Education II 5cr

This course continues to build on the skills learned in Clinical Rotation I continuing to provide clinical instruction in abdominal, obstetric, gynecologic and vascular scanning protocols. Patient care, the role and duties of the sonographer in the health care environment and instruction in the use of various types of ultrasound equipment will be discussed. Students receive instruction and guidance in producing quality sonographic images and the parameters used to evaluate the images. This course requires the student to spend three days a week in an approved ultrasound department. Students will perform a variety of exams and procedures under the supervision of the designated clinical instructor. Students are given specific learning objectives for the rotation. Progress is evaluated according to a competency-based clinical education system.

Prerequisites: SON 1121, SON 1112, SON 1112L, SON 1150, SON 1150L

Term 4 – 13 credit hours

SON 2175 Vascular Sonography II 3cr

This course provides an overview of the attributes of irregular blood flow, pathology, and approaches to treatment. It explores the diagnostic techniques employed to identify vascular disorders in the limbs and abdominal region, encompassing assessments of arterial conditions in the upper and lower extremities, indirect arterial testing, evaluations of bypass grafts, dialysis fistulas, and the vascular system within the abdomen.

Prerequisites: SON 2171, SON 2171L

Corequisites: SON 2175L

SON 2175L Vascular Sonography II Lab 1cr

This course provides a laboratory environment for the student to work with vascular ultrasound and physiologic testing equipment in order to develop the skills necessary to perform vascular studies of the peripheral vascular system. Students will learn protocols, image optimization, patient positioning, and indications for exams. Studies covered include indirect arterial, lower extremity arterial, upper extremity arterial, mesenteric studies and complete abdominal doppler.

Prerequisites: SON 2171, SON 2171L

Corequisites: SON 2175

SON 2930 Special Topics 2cr

This course offers advanced critical thinking principles learned in prior sonography program courses. Included in this course are film critiques, discussion of patient case studies, review of lab values and how they relate to the patient symptoms and pathological process, advanced protocols related to disease processes. Emphasis is on the correlation of all patient data, including sonographic images obtained to assist in the differential diagnosis process. Students will take mock registry exams, practice computerized testing practices, and review test taking skills.

Prerequisites: SON 1121, SON 1112, SON 1112L, SON 1150, SON 1150L

Corequisites: SON 2824

SON 2824 Clinical Education III 7cr

This course continues to build on the skills learned in Clinical Rotation II continuing to provide clinical instruction in abdominal, obstetric, gynecologic and vascular scanning protocols. Patient care, the role and duties of the sonographer in the health care environment and instruction in the use of various types of ultrasound equipment will be discussed. Students receive instruction and guidance in producing quality sonographic images and the parameters used to evaluate the images. This course requires the student to spend four days a week in an approved ultrasound department. Students will perform a variety of exams and procedures under the supervision of the designated clinical instructor. Students are given specific learning objectives for the rotation. Progress is evaluated according to a competency-based clinical education system.

Prerequisites: SON 2814