

# DIAGNOSTIC MEDICAL SONOGRAPHY (DS)

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## **DS-101 - Introduction to Patient Care and Sonography** (2 cr)

This course offers a general overview and introduction to the profession of sonography and the role of the sonographer. Emphasis on Medical Terminology, ethical/legal aspects, written and verbal communication and professional issues relating to registry, accreditation, professional organization and the history of the profession are discussed.

## **DS-101S - Introduction to Patient Care and Sonography-Supplement** (1 cr)

This course offers a general overview and introduction to the profession of sonography and the role of the sonographer. Emphasis on Medical Terminology, ethical/legal aspects, written and verbal communication and professional issues relating to registry, accreditation, professional organization and the history of the profession are discussed.

## **DS-102 - Introduction to Patient Care and Sonography** (3 cr)

This course offers a general overview and introduction to the profession of sonography and the role of the sonographer. Emphasis on medical terminology, ethical/legal aspects, written and verbal communication, and professional issues relating to registry, accreditation, professional organization and the history of the profession are discussed. This course includes CPR, First Aid training, infection control, and sonography equipment maintenance.

## **DS-105 - Principles of Imaging** (3 cr)

This course introduces students to basic principles of medical imaging and equipment design and function. This course focuses on the physics, theories, application and instrumentation of imaging equipment. Imaging of body areas are discussed in relation to their anatomical composition, pathology, and physiology. Students identify imaging artifacts and determine the adjustment required for correction. Special Imaging Modalities are introduced.

*Prerequisite:* MA-115

*Corequisite:* MA-115

## **DS-125 - Sonography Physics & Instrumentation** (4 cr)

This course offers an overview of ultrasound physics as applicable to the medical field. Emphasis is placed on ultrasound transmission in soft tissues, attenuation of sound energy, parameters affecting sound transmission, and resolution of sound beams. Topics include ultrasound wave generation and propagation, transducers, pulse echo imaging, Doppler, bioeffects, and safety. Lecture and Lab.

*Prerequisite:* DS-102 and SC-104 and MA-115

*Designation:* Natural Science

## **DS-160 - Vascular Imaging I** (3 cr)

This course is designed as an introduction to the field of vascular sonography. Students are required to perform venous examinations of the lower extremity, arterial studies of the neck, and some Doppler studies within the abdomen. Emphasis is on the functional workings and settings associated with Doppler signals and waveforms. Topics include: machine/image settings for Doppler imaging; venous imaging of the lower extremities; arterial imaging of the neck; and vascular imaging of the abdomen, including aorta and its primary branches, vena cava, portal and hepatic veins, and renal arteries and veins.

*Prerequisite:* DS-125 and SC-114 and SC-114L

## **DS-161 - Vascular Imaging II** (3 cr)

This course focuses on the peripheral arterial-venous system. Students study the normal anatomy and physiology as well as the pathology of the arteries and veins of the upper and lower extremities. The course reviews various diagnostic and therapeutic options used in the treatment of peripheral arterial disease (PAD) while continuing scanning in the ultrasound-training laboratory. Students learn the scanning protocol for the upper and lower arterial system and the diagnostic criteria for assessing vascular diseases. This course includes duplex ultrasound, plethysmography (PVR), segmental blood pressures (SBP) and Direct Doppler waveform analysis. Lecture and lab.

*Prerequisite:* DS-160

## **DS-170 - Abdominal Sonography I** (3 cr)

This course combines the classroom laboratory experience. It introduces advanced abdominal anatomy, sonographic appearance and procedures, pathology, and pathophysiology for diagnostic medical sonography. Topics include: embryology; anatomy; protocols for all organs and organ systems of the abdomen and non-cardiac chest; variants of normal and congenital anomalies; function of organ and organ systems; patient history and indications for examination; scanning techniques; normal sonographic appearance; pathology and pathophysiology; related imaging and functional testing results; normal and abnormal Doppler and color flow characteristics. Lecture and lab.

*Prerequisite:* DS-102 and SC-114 and SC-114L

*Corequisite:* DS-125

## **DS-171 - Abdominal Sonography II** (3 cr)

This course comprises an advanced study of human anatomy in the transverse, longitudinal, and coronal planes with emphasis on the organs in the abdomen and pelvic cavity to include technical information and scanning techniques. Included is an extensive study of the disease process and physiological alterations, sonographic methods to visualize adult and pediatric abdomens, normal variants, congenital anomalies, physiology, and related laboratory tests. Lecture and lab.

*Prerequisite:* DS-125 and DS-170

## **DS-180 - OB/GYN Sonography I** (3 cr)

This course introduces the student to the female reproductive and urogenital systems as they pertain to ultrasound examination. Starting with the basic female reproductive system, the course expands into early pregnancy sonographic evaluation. Normal and abnormal anatomy and physiology, instrumentation set-up, patient preparation, proper scanning technique, and normal and abnormal findings are presented. Lecture and lab.

*Prerequisite:* DS-105 or DS-102 and SC-114 and SC-114L

*Corequisite:* DS-125

## **DS-181 - OB/GYN Sonography II** (3 cr)

This course is a continuation of DS-180 with emphasis on second trimester, third trimester, maternal and fetal complications involved in Obstetrical Sonography. This course includes specific indications for obstetrical ultrasound examinations, interpretation of lab values, pathophysiology, image analysis, and differential diagnosis. Lecture and Lab.

*Prerequisite:* DS-125 and DS-180

**DS-190 - Echocardiography I (3 cr)**

This course is a basic study of two-dimensional, M-mode, Doppler echocardiography and left ventricular systolic function. There will be discussion of various pathologies which include congestive heart failure, pericardial diseases, cardiomyopathies, and cardiac masses. This course emphasizes the understanding of echocardiographic findings and treatment. The lab includes an introduction to basic scanning protocol, proper patient positioning, and correct ergonomics. In addition basic M-mode and Doppler echocardiography are presented. Imaging planes and windows are explained and demonstrated. Lecture and lab.

*Prerequisite:* DS-125 and SC-116 and SC-116L

**DS-191 - Echocardiography II (3 cr)**

This course utilizes fundamentals to evaluate cardiac function and acquired disease states. Incorporates all forms of noninvasive cardiovascular evaluation with emphasis on performance and interpretation of M-mode, 2-dimensional, and Doppler echocardiography. Emphasis is placed on obtaining quality echocardiograms, and laboratory experience will demonstrate the application of theoretical principles and concepts. Topics include: valvular heart disease, cardiomyopathies, systemic and pulmonary hypertensive heart disease, pericardial diseases, systemic disease, cardiac transplantation, cardiac tumors/masses, diseases of the aorta, pericardial diseases, and miscellaneous topics. Lecture and lab.

*Prerequisite:* DS-190

**DS-240 - Clinical Internship I (2 cr)**

The clinical Internship supplements the student's experience in the classroom and allows them to utilize their skills and techniques at an approved medical facility. This course permits the student to apply theory while acquiring real world knowledge of the medical sonography field. The intern is assigned to a clinical education center to practice and perfect sonography skills at the discretion of the Director of the program. Students are supervised by qualified sonographers and directed in specific experiences designed to meet the objectives for the semester. This course incorporates instruction for work ethics traits with clinical competence. Students are evaluated by the Clinical Coordinator from the College and the supervisor of the facility where they are placed. A total of 200 hours is required.

*Prerequisite:* SC-145 or DS-125 and DS-170, DS-180, SC-116, SC-116L

*Designation:* Field Experience

**DS-241 - Clinical Internship II (3 cr)**

The clinical Internship supplements the student's experience in the classroom and allows them to utilize their skills and techniques at an approved medical facility. This course permits students to apply theory while acquiring real world knowledge of the medical sonography field. The intern is assigned to a clinical education center to practice and perfect sonography skills at the discretion of the Director of the program. Students are supervised by qualified sonographers and directed in specific experiences designed to meet the objectives for the semester. This course incorporates instruction for work ethics traits with clinical competence. Students are evaluated by the Clinical Coordinator from the College and the supervisor of the facility where they are placed. A total of 200 hours is required.

*Prerequisite:* DS-240

*Designation:* Field Experience

**DS-242 - Clinical Internship III (3 cr)**

The clinical Internship supplements the student's experience in the classroom and allows them to utilize their skills and techniques at an approved medical facility. This course permits the student to apply theory while acquiring real world knowledge of the medical sonography field. The intern is assigned to a clinical education center to practice and perfect sonography skills at the discretion of the Director of the program. Students are supervised by qualified sonographers and directed in specific experiences designed to meet the objectives for the semester. This course incorporates instruction for work ethics traits with clinical competence. Students are evaluated by the Clinical Coordinator from the College and the supervisor of the facility where they are placed. A total of 200 hours is required.

*Prerequisite:* DS-241

*Designation:* Field Experience

**DS-250 - Clinical Externship I (7 cr)**

The clinical Internship supplements the student's experience in the classroom and allows them to utilize their skills and techniques at an approved medical facility. This is the first clinical course that permits the student to apply theory while acquiring real world knowledge of the medical sonography field. The extern is assigned to practice and perfect sonography skills at the discretion of the Director of the program. Students are supervised by qualified specialty credentialed sonographer-instructor and directed in specific experiences designed to meet the objectives for the semester. This course incorporates instruction for work ethics traits with meeting mandatory sonography proficiency requirements. Students are evaluated by the Clinical Coordinator from the College and specialty clinical instructor. A total of 320 hours is required.

*Prerequisite:* SC-116, SC-116L, DS-125, DS-170 and DS-180

*Designation:* Field Experience

**DS-251 - Clinical Externship II (7 cr)**

The clinical Internship supplements the student's experience in the classroom and allows them to utilize their skills and techniques at an approved medical facility. This course permits students to apply theory while acquiring real world knowledge of the medical sonography field. The extern is assigned to a clinical education center to practice and perfect sonography skills at the discretion of the Director of the program. Students are supervised by qualified credentialed site facilitators-sonographers and directed in specific experiences designed to meet the objectives for the semester. This course incorporates instruction for work ethics traits with completion of the required mandatory and elective DMS clinical competencies. Students are evaluated by the specialty Clinical Coordinator from the College and the clinical site preceptors or supervisor of the facility, credentialed in the designated DMS specialty areas, where the students are placed. A total of 320 clock hours of the field experience and completion of the mandatory and elective practicum scanning competencies are required.

*Prerequisite:* DS-250

*Designation:* Field Experience

**DS-252 - Clinical Externship III (7 cr)**

The clinical Internship supplements the student's experience in the classroom and allows them to utilize their skills and techniques at an approved medical facility. In this course students are continuing to apply theory while acquiring real world knowledge of the medical sonography field. The extern is assigned to a clinical education center to practice and perfect sonography skills at the discretion of the Director of the program. Students are supervised by qualified credentialed site facilitators-sonographers and directed in specific experiences designed to meet the objectives for the semester. This course incorporates instruction for work ethics traits with completion of the required mandatory and elective DMS clinical competencies. Students are evaluated by the specialty Clinical Coordinator from the College and the clinical site preceptors or supervisor of the facility, credentialed in the designated DMS specialty areas, where the students are placed. A total of 320 clock hours of the field-experience and completion of the mandatory and elective practicum scanning competencies are required.

*Prerequisite:* DS-251

*Designation:* Field Experience