

**DCS Diagnostic Cardiac Sonography****DCS 101 Electrocardiography I (1.5-1) 2 crs.**

Provides instruction and practice in the performance and comprehensive interpretation of rhythm ECGs. Covers related electrophysiology. Includes instruction in holter monitoring.

**Prerequisite:** BIO 135 or (BIO 160 and BIO 161) with a grade of C or better.

**DCS 102 Electrocardiography II (1.5-1) 2 crs.**

Provides instruction and practice in the performance and comprehensive interpretation of 12 lead ECGs. Covers related electrophysiology. Includes instruction in maximal stress testing.

**Prerequisite:** DCS 101 with a grade of C or better.

**DCS 105 Ultrasound Physics/Instrumentation I (2-0) 2 crs.**

Instructs students in the ultrasound imaging programs in the principles of ultrasound physics and instrumentation. Examines continuous and pulsed sound, sound wave intensities, interaction of sound and media, sound propagation, axial resolution, transducer basics, anatomy of a sound wave, and basic display modalities.

**Prerequisite:** Admission into the DCS program.

**DCS 106 Ultrasound Physics/Instrumentation II (2-0) 2 crs.**

Continues to instruct students in the ultrasound imaging programs in the principles of ultrasound physics and instrumentation.

Examines real-time imaging, ultrasound instrumentation, displays, signal processing, harmonics and Doppler principles. Concludes with imaging artifacts, bioeffects and quality assurance.

**Prerequisite:** DCS 105 with a grade of C or better.

**DCS 107 Sonography Theory I (2-0) 2 crs.**

Discusses the role of a sonographer and the sonography profession. Examines the different sonography specialty areas and related sonographic exams. Explores the ultrasound cross-sectional anatomy of the abdomen, pelvis, chest and neck. Maps the circulation of the cerebral vascular system. Introduces the normal and abnormal cerebrovascular ultrasound. Investigates cerebrovascular disease and trains the student to interpret cerebrovascular ultrasound exams.

**Corequisite:** DCS 109.

**DCS 108 Sonography Theory II (2-0) 2 crs.**

Builds on the theoretical foundations covered in DCS 107 (Sonography Theory I). Explores the ultrasound cross sectional vascular anatomy of the extremities. Maps the circulation from the trunk to the periphery. Introduces the normal and abnormal peripheral arterial and venous sonogram. Investigates peripheral vascular disease. Trains the student to interpret peripheral arterial and venous sonographic studies.

**Prerequisite:** DCS107 with a grade of C or better.

**Corequisite:** DCS110.

**DCS 109 Sonography Lab I (0-2) 1 cr.**

Provides supervised laboratory instruction and practice in the basics of ultrasound imaging. Introduces professional expectations of the student sonographer. Covers proper procedure and body mechanics for an ultrasound exam. Orients the student to imaging body habitus. Instructs on the operation of ultrasound equipment. Trains the student to perform diagnostic carotid sonograms. Pass/fail grade.

**Corequisite:** DCS 107.

**DCS 110 Sonography Lab II (0-2) 1 cr.**

Provides supervised laboratory instruction and practice in peripheral vascular ultrasound imaging. Trains the student to perform diagnostic peripheral arterial and venous sonographic examinations. Non-imaging physiological peripheral arterial examination techniques are also covered. Expands upon the professional expectations of the student sonographer. Pass/fail grade.

**Prerequisite:** DCS109 with a grade of C or better.

**Corequisite:** DCS 108.

**DCS 112 Sonography Lab III (0-2) 1 cr.**

Provides additional laboratory practice in common vascular ultrasound exams. This course is not required for graduation. Pass/fail grade.

**DCS 207 Cardiac Sonography Theory I (6-0) 6 crs.**

Explores the ultrasound cross-sectional anatomy of the heart. Maps the cardiac circulation. Introduces the normal and abnormal echocardiogram. Investigates valvular, coronary and pulmonary heart disease. Also examines right and left ventricular systolic dysfunction. Trains the student to interpret these pathologies on an echocardiogram.

**Prerequisite:** DCS 106 with a grade of C or better.

**Corequisite:** DCS 209.

**DCS 208 Cardiac Sonography Theory II (6-0) 6 crs.**

Investigates a host of cardiac and other conditions that impact the heart and the echocardiogram. Covers pericardial, myocardial, endocardial, aortic, diastolic, hypertensive, and diabetic heart disease. Examines heart transplant, valvular repair and replacement, cardiac masses and trauma, and coronary artery anomalies. Investigates systemic conditions that alter the heart. Trains the student to interpret these conditions on an echocardiogram. Introduces transesophageal, stress, contrast, 3D and other advanced echo modalities.

**Prerequisite:** DCS 207 with a grade of C or better.

**Corequisite:** DCS 210.

**DCS 209 Cardiac Sonography Lab I (0-4) 2 crs.**

Provides supervised laboratory instruction and practice in cardiac ultrasound imaging. Trains the student to perform a basic adult echocardiogram. Reinforces the professional expectations of the student sonographer. Pass/fail grade.

**Prerequisite:** DCS 106 with a grade of C or better.

**Corequisite:** DCS 207.

**DCS 210 Cardiac Sonography Lab II (0-4) 2 crs.**

Continues supervised laboratory instruction and practice in cardiac ultrasound imaging. Trains the student to perform advanced targeted adult echocardiograms. Reinforces the professional expectations of the student sonographer. Pass/fail grade.

**Prerequisite:** DCS 209 with a grade of C or better.

**Corequisite:** DCS 208.

**DCS 220 Introduction to the Cardiac Sonography Clinical (2-3) 3 crs.**

Prepares the student for their role as a cardiac sonographer in the hospital setting. Covers relevant policies, procedures, and considerations for working in the hospital, caring for patients, and completing sonograms in the clinical environment. Grooms the student for entrance into the sonography profession. Includes simulated and observational hospital experiences.

**Prerequisite:** DCS 207 and DCS 209 with grades of C or better.

**Corequisite:** DCS 208 and DCS 210.

**DCS 230 Cardiac Sonography Clinical (0-25) 5 crs.**

Provides the student with practical clinical experience performing adult echocardiograms in a hospital or other clinical setting. Orients the student to that hospital environment and the specific policies and procedures for completing sonograms in that medical setting. Allows the student to perform these echocardiograms on patients under the close supervision of clinical staff. Provides an opportunity for students to develop and demonstrate the knowledge base, clinical skills, and professional skills required of an entry level sonographer.

**Prerequisite:** DCS 208, DCS 210 and DCS 220 with grades of C or better.

**DCS 260 Advanced Sonography Seminar (1-0) 1 cr.**

Introduces new or advanced topics in sonography. Explores the evolution and provides necessary background in terms of related anatomy, hemodynamics, physics and pathology. Presents related ultrasound case studies and trains in the interpretation of the ultrasound examination. Covers implications to the performance of the sonographic procedure including protocols, modalities and specific assessment techniques. Enhances the skill of the sonographer past entry level. May be repeated up to six credit hours.