

# CDS - CARDIAC SONOGRAPHY

## **CDS 100** 1 credit hours (lecture: 1 | lab: 0)

### **Medical Terminology for the Cardiac Sonographer**

Course provides the student with a thorough understanding of basic terms that relate to the medical profession along with cardiac sonography. Students will learn the prefixes, the root words, the suffixes, how to spell; they will build a medical vocabulary and learn the meaning of medical terms in order to adequately communicate with medical professionals.

*Instruction Type: In-Person | Online | Hybrid*

*Term Typically Offered: Summer*

## **CDS 101** 2 credit hours (lecture: 2 | lab: 0)

### **Introduction to Sonography and Patient Care**

Course provides the student with a thorough understanding of the history of sonography, sonography registry boards and organizations, patient care as it relates to the patient and the sonographer, how best to deal with patient communication issues, how poor ergonomics and body mechanics are the foundation for work-related issues, sonographer qualities, vital signs, legal issues and sonography careers.

**Prerequisite:** BIO 114 and CDS 100 with minimum grades of C.

*Instruction Type: In-Person | Online | Hybrid*

*Term Typically Offered: Fall*

## **CDS 102** 1 credit hours (lecture: 1 | lab: 0)

### **Basic EKG for the Cardiac Sonographer**

Course provides information about the electrical activity of the heart with a focus on cardiac sonography. Content includes the recognition of arrhythmias that may or may not need urgent attention and the ability to correlate the timing of blood flow in the heart with the electrical activity of the heart simultaneously.

*Instruction Type: In-Person | Online | Hybrid*

*Term Typically Offered: Spring*

## **CDS 103** 3 credit hours (lecture: 3 | lab: 0)

### **Anatomy and Physiology for the Cardiac Sonographer**

Course focuses on the cardiac cross-sectional anatomy and physiology as well as the vascular segments associated with cardiac imaging of the human heart, the different body systems, cardiac conduction, myocardial performance, circulation throughout the body, pulmonary and systemic circulation and transducer imaging scan planes.

**Prerequisite:** BIO 114 and CDS 100 with minimum grades of C.

*Instruction Type: In-Person | Online | Hybrid*

*Term Typically Offered: Fall*

## **CDS 104** 3 credit hours (lecture: 3 | lab: 0)

### **Doppler Physics and Hemodynamics for the Cardiac Sonographer**

Course focuses on factors that will impact blood flow throughout the cardiovascular system and how the spectral Doppler signal, color flow Doppler and aliasing are displayed on the monitor by the use of Doppler Physics. Hemodynamic formulas for valve stenosis, heart rate, stroke volume, cardiac output, cardiac index, ejection fraction, oxygenation saturation levels, cath lab pressures, along with provocative maneuvers that will alter cardiac physiology.

**Prerequisite:** MAT 140 and PHY 101 with minimum grades of C.

*Instruction Type: In-Person | Online | Hybrid*

*Term Typically Offered: Fall*

## **CDS 105** 3 credit hours (lecture: 3 | lab: 0)

### **Ultrasound Physics and Instrumentation I**

Course focuses on the principles and types of sound waves in soft tissue, pulse-wave, continuous-wave, acoustic variables, acoustic parameters, pulse repetition period, pulse repetition frequency, decibels, attenuation, intensity of the sound beam, the different types as well as specific features of the transducers used in ultrasound imaging and an understanding of the knobology of the ultrasound machine relating to ultrasound physics.

**Prerequisite:** CDS 101, CDS 103 and CDS 104, all with minimum grades of C.

*Instruction Type: In-Person | Online | Hybrid*

*Term Typically Offered: Spring*

## **CDS 106** 3 credit hours (lecture: 3 | lab: 0)

### **Cardiac Sonography I**

Course covers the adult echocardiography exam, which focuses on embryology, cardiac views, cardiac measurements, wall segments abnormalities, heart valve disease and anomalies, ischemic heart disease and indications for performing a complete echocardiogram.

**Prerequisite:** CDS 101, CDS 103 and CDS 104, each with a minimum grade of C.

*Instruction Type: In-Person | Online | Hybrid*

*Term Typically Offered: Spring*

## **CDS 107** 3 credit hours (lecture: 1 | lab: 5)

### **Cardiac Sonography Lab Practicum I**

This hands-on laboratory practicum course introduces students to the ultrasound equipment and cardiac scanning and prepares them to enter the clinical setting. Students will perform these tasks in the scanning lab on campus.

**Prerequisite:** BIO 114 and CDS 100 with minimum grades of C.

*Instruction Type: In-Person | Online | Hybrid*

*Term Typically Offered: Fall*

## **CDS 108** 6 credit hours (lecture: 2 | lab: 10)

### **Cardiac Sonography Lab Practicum II**

This hands-on laboratory practicum course provides students with a thorough knowledge of the ultrasound equipment, the protocol for performing an echocardiogram and prepares them to enter the clinical setting. Students will perform these tasks in the scanning lab on campus.

**Prerequisite:** CDS 107 with a minimum grade of C.

*Instruction Type: In-Person | Online | Hybrid*

*Term Typically Offered: Spring*

## **CDS 201** 3 credit hours (lecture: 3 | lab: 0)

### **Ultrasound Physics and Instrumentation II**

Course focuses on understanding the knobology of the ultrasound machine, imaging artifacts and hemodynamics, and the characteristics of blood flow for the purpose of optimizing and acquiring a diagnostic quality image, harmonics and contrast agents, quality assurance, and bioeffects. Emphasis is placed on the significance of medical ethics and the interaction between cardiac sonographer, the patient, and the medical staff.

**Prerequisite:** CDS 105 with a minimum grade of C.

*Instruction Type: In-Person | Online | Hybrid*

*Term Typically Offered: Summer*

**CDS 202 3 credit hours (lecture: 1 | lab: 5)****Cardiac Sonography Lab Practicum III**

This hands-on laboratory practicum course prepares students for completing an echocardiogram according to a protocol in a clinical setting. Students will gain a thorough knowledge of the ultrasound equipment and the protocol for performing an echocardiogram. Students will perform these tasks in the scanning lab on campus.

**Prerequisite:** CDS 108 with a minimum grade of C.

*Instruction Type: In-Person | Online | Hybrid*

*Term Typically Offered: Fall*

**CDS 204 3 credit hours (lecture: 3 | lab: 0)****Cardiac Sonography II**

Course focuses on diseases of the aorta, congenital heart defects, cardiac anomalies, cardiomyopathies, thrombus, masses, cath lab pressures, along with other ultrasound modalities such as Transesophageal echocardiography, Stress echocardiography, the use of contrast agents, Dyssynchrony, Tissue Doppler, Myocardial strain and Strain Rate, Intravascular ultrasound, Cardiac transplant and 3D echo.

**Prerequisite:** CDS 106 with a minimum grade of C.

*Instruction Type: In-Person | Online | Hybrid*

*Term Typically Offered: Fall*

**CDS 205 3 credit hours (lecture: 3 | lab: 0)****Registry Review and Advancing Trends in Cardiac Sonography**

Course reviews material covered in CDS 106 and CDS 204, as well as adult pathological and congenital anomalies associated with diseases of the heart with an emphasis on preparing students to pass the Registry Board Examination.

**Prerequisite:** CDS 204 with a minimum grade of C.

*Instruction Type: In-Person | Online | Hybrid*

*Term Typically Offered: Spring*

**CDS 206 3 credit hours (lecture: 3 | lab: 0)****Ultrasound Physics and Instrumentation Review**

Course focuses on preparation for successful completion of the ultrasound physics portion of the Registry Board Examination. Content includes reviewing the fundamental concepts of sound, sound waves, depth, frequency, attenuation, Doppler, blood flow, knobology, transducers, quality assurance, clinical safety, interactions between sonographers, patients and medical staff, and medical ethics.

**Prerequisite:** CDS 201 with a minimum grade of C.

*Instruction Type: In-Person | Online | Hybrid*

*Term Typically Offered: Fall*

**CDS 207 1 credit hours (lecture: 1 | lab: 0)****Pharmacology for the Cardiac Sonographer**

Course focuses on the different pharmacological types of drugs, side effects, contraindications and methods of administration that are used in heart disease and when performing an echocardiogram.

**Prerequisite:** CDS 204 with a minimum grade of C.

*Instruction Type: In-Person | Online | Hybrid*

*Term Typically Offered: Spring*

**CDS 208 6 credit hours (lecture: 0 | lab: 24)****Cardiac Sonography Clinical Externship I**

Course provides clinical training in a hospital or imaging facility that performs echocardiograms. Students will perform hands-on diagnostic quality echocardiograms and assist with various patient care responsibilities under the direct supervision of a mentor who is a registered diagnostic cardiac sonographer (RDCS), registered cardiac sonographer (RCS) or medical doctor (MD) in the echocardiology department.

**Prerequisite:** CDS 106, CDS 108 and CDS 201, each with a minimum grade of C.

*Instruction Type: In-Person | Online | Hybrid*

*Term Typically Offered: Fall*

**CDS 209 8 credit hours (lecture: 0 | lab: 32)****Cardiac Sonography Clinical Externship II**

This is a second course of a two-course sequence that provides clinical training in a hospital or imaging facility that performs echocardiograms. Students will perform hands-on diagnostic quality echocardiograms and assist with various patient care responsibilities under the direct supervision of a mentor who is a registered diagnostic cardiac sonographer (RDCS), registered cardiac sonographer (RCS) or medical doctor (MD) in the echocardiology department.

**Prerequisite:** CDS 208 with a minimum grade of C.

*Instruction Type: In-Person | Online | Hybrid*

*Term Typically Offered: Spring*