Adult Cardiac Diagnostic Medical Sonography (DMS)

DMS 104 Diagnostic Ultrasound Foundations

4 Hours

Prerequisites: Acceptance into Diagnostic Medical Sonography Program

5 hours weekly (3-2)

This course focuses on the study of clinical medicine pertinent to sonography. Care of the patient with emphasis placed on basic human needs, and age and cultural competency will be discussed. Interprofessional communication, both oral and written, physical assessment skills, obtaining clinical history and related symptoms, along with knowledge of other diagnostic testing pertinent to the ultrasound diagnosis will be introduced. Patient transport, including proper transfer skills, and patient positioning techniques will be reviewed and demonstrated. Current legal issues and medical ethics in sonography will be discussed along with an overview of the sonography practice, to include, professional organizations, introduction to ergonomics, infection control, medical asepsis, and quality control.

DMS 112 Cardiac EKG and Electrophysiology

1 Hour

Prerequisites: BIO 206, DMS 104

1 hour weekly (1-0)

This course is designed to prepare the student to become proficient in basic EKG interpretation of EKG tracings. This course covers principles of the cardiac conduction system, basic EKG applications, dysrhythmia recognition of atrial and ventricular rhythms and electrophysiology concepts. After completing this course, the student will be able to recognize basic EKG arrythmias, describe relationship of cardiovascular anatomy to the cardiac conduction system, be knowledgeable of cardiovascular medications, and identify EKG related medical emergencies. Pathophysiology of specific disease processes will be covered in following courses: DMS 202, DMS 204, and DMS 224.

DMS 200 Medical Physics and Instrumentation I

2 Hours

Prerequisites: DMS 112, DMS 202, DMS 214 and DMS 226

2 hours weekly (2-0)

This course will present the sonography student detailed explanation of ultrasound instrumentation and the physical principles of sound. Emphasis will be placed on propagation principles, transducer parameters. Interactive properties of ultrasound with human tissues, equipment operations and image optimization.

DMS 202 Cardiac Anatomy and Physiology

4 Hours

Prerequisites: DMS 104, BIO 206

4 hours weekly (4-0)

This course is a study of the cardiac and vascular anatomy and physiology. The first 4 weeks will focus on normal cardiac anatomy and normal cardiac hemodynamics. The next 12 weeks will focus on abnormal cardiac pathology, and pathophysiology, along with an introduction to embryology and congenital heart disease. Clinical signs and symptoms, supporting diagnostic testing, and treatment of various cardiac diseases will be discussed.

DMS 204 Cardiac Ultrasound Imaging/Lab I

4 Hours

Prerequisites: DMS 104, BIO 206

6 hours weekly (2-4)

This course will cover the basic terminology, normal cardiac anatomy, introduction to ultrasound instrumentation, and physical principles necessary for the student to begin two-dimensional and M-mode ultrasound scanning of the normal heart. The laboratory component of Cardiac Ultrasound Imaging Lab I is designed for the student to practice applications of basic scanning techniques and protocols with emphasis on the normal heart.

DMS 206 Cardiac Ultrasound Clinic I

2.5 Hours

Prerequisites: DMS 104, BIO 206, ALH 101. Student must also have all health record onboarding per the DMS Handbook required to enter DMS 206.

7.5 hours weekly (0-7.5)

This course is a supervised clinical experience covering cardiac-scanning techniques and protocols with emphasis on normal cardiac anatomy and measurements. Two-dimensional imaging and measurement, M-mode imaging and measurements, along with color flow, and cardiac Doppler ultrasound scanning of the normal heart will be introduced. The course is designed for the students to recognize basic cardiac ultrasound imaging techniques and observe a functioning ultrasound department.

DMS 210 Medical Physics & Instrumentation II

2 Hours

Prerequisites: DMS 200

2 hours weekly (2-0)

This course will present the sonography student with a detailed explanation of ultrasound instrumentation and the physical principles of sound. Emphasis will be placed on physical principles of modalities of ultrasound, fluid dynamics, hemodynamics, artifacts, bioeffects, contrast and harmonics, and quality assurance.

DMS 214 Cardiac Ultrasound Imaging/Lab II

4 Hours

Prerequisites: DMS 204

6 hours weekly (2-4)

This course will be a continuation of normal cardiac ultrasound terminology, an introduction to abnormal cardiac anatomy, introduction to advanced physical principles necessary for the student to begin Doppler ultrasound scanning of the abnormal heart. Interprofessional communication, conflict resolution, and team development will be explained. The laboratory component of Cardiac Ultrasound Imaging is designed for the student to practice applications of basic scanning techniques and protocols with emphasis on the normal heart and introduction to the abnormal heart.

DMS 224 Cardiac Ultrasound Imaging/Lab III

4 Hours

Prerequisites: DMS 214

6 hours weekly (2-4)

This course will cover review of normal and abnormal cardiac anatomy, Doppler findings, and add in advanced echocardiogram procedures. TEE, 3D, strain, and other advanced echocardiogram procedures will be covered. The laboratory component of Cardiac Ultrasound Imaging Lab III is designed for the student to practice the application of scanning techniques and protocols with emphasis on advanced scanning and normal and abnormal Doppler findings. Students will have the opportunity to apply and evaluate advanced scanning scenarios and complex cardiac scanning in this lab.

DMS 226 Cardiac Ultrasound Clinic II

5 Hours

Prerequisites: DMS 206 and ALH 101. The

student must maintain updated health records per DMS Handbook.

15 hours weekly (0-15)

The clinical component of Cardiac Ultrasound Imaging II. This course is a supervised clinical experience that will cover cardiac scanning techniques and protocols with emphasis on color flow, cardiac Doppler, and two-dimensional and M-mode ultrasound scanning of the normal heart and introduction to abnormal cardiac pathology. This course is designed for the student to practice cardiac ultrasound techniques and observe a functioning ultrasound department.

DMS 230 Cardiac Seminar

2 Hours

Prerequisites: Concurrent enrollment with DMS 246

2 hours weekly (2-0)

In this course, students will review physics concepts and adult echocardiography principles related to cardiac ultrasound imaging in preparation for the national registry exams for Echocardiography. A review of case studies and "mock" examinations will help the student to focus on individual problem areas. This is an internet course.

DMS 236 Cardiac Ultrasound Clinic III

5 Hours

Prerequisites: DMS 214, DMS 226, ALH 101. The student must also maintain updated health records.

15 hours weekly (0-15)

This course is a clinical component of Cardiac Ultrasound Imaging III. This course is a supervised clinical experience covering cardiac scanning techniques and protocols with emphasis on two-dimensional M-modes, color flow, and cardiac Doppler ultrasound scanning of the normal and abnormal heart. The course is designed for the students to interpret cardiac ultrasound techniques and collaborate within a functioning ultrasound department. TEE, 3D, strain, and other advanced echocardiogram procedures will also be interpreted.

DMS 246 Cardiac Ultrasound Clinic IV

10 Hours

Prerequisites: DMS 236 and ALH 101. The student must also maintain updated health records.

30 hours weekly (0-30)

This course is a clinical component of Cardiac Ultrasound Imaging IV. The course is designed for the students to master cardiac ultrasound techniques while performing as a functional part of the cardiac sonography team. TEE, 3D. strain, and other advanced echocardiogram procedures will be evaluated. This course is a supervised clinical experience covering cardiac scanning techniques and protocols with emphasis on two-dimensional M-modes, color flow, and cardiac Doppler ultrasound scanning of the normal and abnormal heart. Students will be required to assimilate advanced cardiac procedures and work with the echocardiography team.