

SONOGRAPHY PROGRAM

COURSE DESCRIPTIONS/PREREQUISITE INFORMATION

DMS 100 Introduction to Diagnostic Medical Sonography

History of ultrasound including medical applications. Description of the roles, responsibilities, and rules of the diagnostic medical sonographer. Introduction to the fundamental principles of the use and maintenance of ultrasound equipment. Indications of diagnostic sonography procedures, positioning, safety, and image processing. Legal and ethical issues in an ultrasound department.

Prerequisite: Admission to the Diagnostic Medical Imaging Sonography Program or consent of instructor.

3 Semester hour(s)

Lecture/Lab Hours: 3 lec/week

DMS 101 Sonographic Physics and Instrumentation I

Introduction to physics of acoustics and sonographic instrumentation. Production and types of sound waves discussed. Demonstration of propagation of ultrasound through tissues, transducers, pulse-echo instruments, and display methods.

Prerequisite: Admission to the Diagnostic Medical Sonography Program or consent of instructor
2 Semester hour(s)

Lecture/Lab Hours: 1 lec/2 lab/week

DMS 102 Sonographic Physics and Instrumentation II

Continuation of pulse-echo instrumentation including harmonics, image artifacts, and color flow imaging with Doppler instrumentation. Bioeffects and safety in ultrasound imaging. Quality management applied to Sonography.

Prerequisite: DMS 101 with a grade of C or better or consent of instructor.

2 Semester hour(s)

Lecture/Lab Hours: 1 lec/2 lab/week

DMS 103 Sonographic Cross-Sectional Anatomy

Introduction to the basics of cross-sectional anatomy as interpreted on diagnostic sonographic images. Sectional human anatomy in the transverse, sagittal, and coronal planes. Correlation of anatomy with cadavers and ultrasound images.

Prerequisite: Admission to the Diagnostic Medical Sonography program.

3 Semester hour(s)

Lecture/Lab Hours: 2 lec/2 lab/week

DMS 104 Fundamentals of OB/GYN I

Students will be introduced to the female reproductive system as it relates to Sonography. Topics will include imaging in the first trimester of pregnancy and non-gravid uterus, review of ultrasound images of normal anatomy and pathology, ultrasound appearance of the cervix, uterus, fallopian tubes, ovaries, placenta, and fetus. Management of gynecologic infertility and post-menopausal women will also be discussed.

Prerequisite: Admission to Diagnostic Medical Sonography program or consent of instructor.

3 Semester hour(s) Lecture/Lab Hours: 2 lec/2 lab/week

DMS 105 Fundamentals of OB/GYN II

Students will be introduced to fetal ultrasound techniques in the second and third trimester. Topics will include multiple gestation pregnancies, antenatal syndromes, congenital fetal disorders, placenta, umbilical cord, and membrane conditions. Fetal growth assessment and management of growth disorders will also be discussed.

Prerequisite: DMS 104 with a grade of C or better, or equivalent or consent of instructor.

3 Semester hour(s)

Lecture/Lab Hours: 2 lec/2 lab/week

DMS 106 Abdomen/Superficial Structures I

Students will be introduced to abdomen and superficial structure pathologies seen with ultrasound. Students will learn to identify and document the sonographic appearance of pathologies. The following areas will be discussed: great vessels, inferior vena cava, liver, biliary, pancreas, spleen, urinary system, thyroid, parathyroid, salivary glands, gastrointestinal tract, retroperitoneum, non-cardiac chest, scrotum, and prostate.

Prerequisite: DMS 100, DMS 101, DMS 103, DMS 104, DMS 120, and DMS 121 all with a grade of C or better.

3 Semester hour(s)

Lecture/Lab Hours: 2 lec/2 lab/week

DMS 107 Abdomen/Superficial Structures II

Continuation of abdomen and superficial structure pathologies seen using ultrasound with emphasis on neonatal and pediatrics. The following areas will be discussed: musculoskeletal, neonatal brain, infant hips, infant spine, pediatric gastrointestinal, pediatric abdomen, pediatric gynecology, and pediatric urinary/adrenal.

Prerequisite: DMS 106 with a grade of C or better.

1 Semester hour

Lecture/lab Hours: 1 lec/week

DMS 108 Legal Issues of Health Care-Sonography

Students will be introduced to the legal system as it applies to the medical field. Medical malpractice cases will be reviewed and discussed. Students will be taught how to protect themselves from becoming involved in a medical malpractice case.

Prerequisite: DMS 104 and DMS 106 with a grade of C or higher or consent of instructor.

1 Semester hour

Lecture/lab Hours: 1 lec/week

DMS 109 Fundamentals of Breast Sonography

Students will be introduced to the fundamentals of breast Sonography. This course reviews the identification of sonographic physics-related artifacts in normal and abnormal breast tissue and anatomy. Correlation with other imaging modalities and surgical techniques in breast pathology are also included.

Prerequisite: DMS 102 with a grade of C or higher, or Registered Diagnostic Medical Sonographer (ARDMS) or ARRT registered sonographer.

1 Semester hour

Lecture/lab hours: 1 lec/week

DMS 120 Hands-On Scanning Lab 1

Overview and emphasis of principles taught in DMS 100 in Abdominal/Superficial Structures and Obstetrics/Gynecology. Students perform hands-on scanning techniques in the scanning lab. Various scanning techniques are demonstrated on fellow students under the guidance of the instructor. Proper techniques in manipulating the transducer probe are demonstrated.

Identification of organ systems and corresponding ultrasound images.

Prerequisite: Admission to Diagnostic Medical Imaging Sonography Program or consent of instructor.

1 Semester hour

Lecture/Lab Hours: 2/lab/week

DMS 121 Hands-On Scanning Lab 2

Course will expand on and perform principles of Abdominal/Superficial Structures and Obstetrics/Gynecology. Students will perform advanced hands-on scanning techniques utilizing proper manipulation of transducer probes.

Prerequisite: Admission to Diagnostic Medical Imaging Sonography Program or consent of instructor.

1 Semester hour

Lecture/lab Hours: 2/lab/week

DMS 122 Hands-On Scanning Lab 3

Continuation of principles taught in DMS 121 in Abdominal/Superficial Structures and Obstetrics/Gynecology. Emphasis placed on advanced skills in obstetrical scanning. Students perform hands-on scanning techniques on volunteer patients under the guidance of the instructor. Proper techniques in manipulating the transducer probe are demonstrated. Identification of organ systems and corresponding ultrasound images.

Prerequisite: DMS 121 with a grade of C or higher or consent of instructor.

1 Semester hour

Lecture/Lab Hours: 2/lab/week

DMS 123 Hands-On Scanning Lab 4

The course will expand on principles of Abdominal and Superficial Structures and Obstetrics and Gynecology. Students will perform advanced hands-on scanning techniques utilizing proper manipulation of transducer probes. Emphasis will be placed on students demonstrating their scanning skills on patient volunteers.

Prerequisite: DMS 121 with a grade of C or higher or consent of instructor

1 Semester hour

Lecture/Lab Hours: 2/lab/week

DMS 130 Case Study Critique I

Students will present diagnostic medical ultrasound cases of normal and abnormal anatomy. Students will discuss imaging techniques and image quality of cases presented.

Prerequisite: DMS 100, DMS 101, DMS 103, DMS 104, DMS 120, and DMS 121 all with a grade of C or better.

1 Semester hour

Lecture/Lab Hours: 1/lec/week

DMS 131 Case Study Critique II

Students will present diagnostic medical ultrasound cases of normal and abnormal anatomy. Students will discuss imaging techniques and image quality of cases presented.

Prerequisite: DMS 107, DMS 123, and DMS 141 all with a grade of C or better.

1 Semester hour

Lecture/Lab Hours: 1/lec/week

DMS 140 Clinical Education I

Students are placed in a healthcare institution to reinforce and broaden knowledge gained in the first semester of the program. Correlation and application of skills learned in concurrent courses DMS 102, 105, 106, and 130. Technical and professional aspects of patient scanning in obstetrics, pelvic, abdominal, and superficial structures.

Prerequisite: DMS 100, DMS 101, DMS 103, and DMS 104 (all with a grade of C or better)

2 Semester hour(s)

Lecture/Lab Hours: 12/lab/week

DMS 141 Clinical Education II

Students will participate in a clinical experience in Sonography at a healthcare institution. Students will apply concepts and skills learned in DMS courses at the healthcare institution.

Prerequisite: DMS 140 with a grade of C or better

2 Semester hour(s)

Lecture/Lab Hours: 12/lab/week

DMS 142 Clinical Education III

Students will continue Sonography clinical experience in a healthcare institution. Students will continue applying concepts and skills learned in DMS courses at the health care institution.

Prerequisite: DMS 141 with a grade of C or better.

3 Semester hour(s)

Lecture/Lab Hours: 24/lab/week

DMS 198 Introduction to Pathophysiology for Sonographer

Students will be introduced to physiological processes associated with disease and/or injury in the body systems. Pathology cases are illustrated with review of diagnostic medical imaging studies including Sonography, Computed Tomography, Magnetic Resonance Imaging, Radiography, and Nuclear Medicine.

Prerequisite: BIO 109 or equivalent or consent of instructor.

1 Semester hour

Lecture/Lab Hours: 1/lec/week

DMS 199 Patient Care Skills for Sonographers

Students will be introduced to patient care skills applied to the role of a Sonographer in an imaging department. Topics will include patient care skills, scanning ergonomics, patient confidentiality, and communication skills with hospital personnel as applied to all areas of sonography.

Prerequisite: BIO 109 or equivalent or consent of instructor.

1 Semester hour

Lecture/Lab Hours: 1/lec/week

DMS 200 Abdominal and Peripheral Arterial

Evaluation of blood vessels, their purpose and composition, detailed physiology of the arterial blood flow system, and ultrasound testing with direct and indirect methods. Arterial anatomy of the abdomen, pelvic, and upper extremities as well as the lower extremities will be reviewed.

Diseases of the arterial system and their effects will be addressed with indications for ultrasound arterial examinations and treatments.

Prerequisite: Admission to Diagnostic Medical Sonography program and concurrent enrollment required in DMS 220 or consent of instructor.

2 Semester hour(s)

Lecture/Lab Hours: 2 lec/week

DMS 201 Cerebrovascular Ultrasound

Overview of the purpose and composition of blood vessels and the physiology of the cerebrovascular system. Cerebrovascular anatomy is reviewed. Diseases of the cerebrovascular system are addressed with the indications for ultrasound cerebrovascular examinations. A review and demonstration of cerebrovascular ultrasound testing and findings and other laboratory modalities. Treatments for various diseases of the cerebrovascular system are addressed.

Cerebrovascular testing as a part of ongoing, post-intervention patient management is included.

Prerequisite: Admission to Diagnostic Medical Sonography program and concurrent enrollment required in DMS 203 and DMS 221 or consent of instructor.

2 Semester hour(s)

Lecture/Lab Hours: 2 lec/week

DMS 202 Abdominal and Peripheral Venous

Overview of the purpose and composition of blood vessels and the physiology of the venous blood flow system. Venous anatomies of the abdomen, pelvis, upper extremities, as well as the lower extremities are addressed. Diseases of the venous system, their effects, and indications for ultrasound venous examinations are included. An overview of the abdominal and peripheral venous ultrasound testing, their findings, and other laboratory modalities. Treatments for various diseases of abdominal and peripheral venous systems are reviewed.

Prerequisite: Admission to Diagnostic Medical Sonography program and concurrent enrollment required in DMS 222 or consent of instructor.

2 Semester hour(s)

Lecture/Lab Hours: 2 lec/week

DMS 203 Clinical Education Vascular I

Students will participate in a clinical experience in vascular sonography at a healthcare institution. Students will apply concepts and skills learned in DMS vascular courses at the healthcare institution.

Prerequisite: Admission to Diagnostic Medical Imaging Sonography program and concurrent enrollment required in DMS 201.

3 Semester hour(s)

Lecture/Lab Hours: 24 lab/week

DMS 204 Clinical Education Vascular II

Students will continue vascular sonography clinical experience in a healthcare institution. Students will continue applying concepts and skills learned in DMS vascular courses at the healthcare institution.

Prerequisite: Admission to the program is required and DMS 203 with a grade of C or better, or equivalent.

3 Semester hour(s)

Lecture/Lab Hours: 18 lab/week

DMS 220 Abdominal and Peripheral Arterial Hands-On Scan

An overview of abdominal and peripheral arterial ultrasound testing that offers hands-on training in the classroom with vascular ultrasound equipment. Application of principles taught in DMS 200. Various arterial testing techniques and scanning are demonstrated and performed on fellow students under the guidance of the instructor. Proper techniques in these testing modalities are reviewed along with proper identification of the arterial system.

Prerequisite: Admission to Diagnostic Medical Sonography program and concurrent enrollment in DMS 200.

1 Semester hour

Lecture/Lab Hours: 2 lab/week

DMS 221 Cerebrovascular Ultrasound Hands-On Scan

Continuation of DMS 201 that provides a further understanding of cerebrovascular ultrasound testing by offering hands-on training in the classroom with vascular ultrasound equipment. Various cerebrovascular testing techniques and scanning are demonstrated to the students. Under the guidance of the instructor, students will practice these techniques on fellow students. Proper techniques in these testing modalities will be reviewed along with proper identification of the cerebrovascular system.

Prerequisite: Admission to Diagnostic Medical Imaging Sonography program and concurrent enrollment required in DMS 201.

1 Semester hour

Lecture/Lab Hours: 2 lab/week

DMS 222 Abdominal and Peripheral Venous Hands-On Scan

Continuation of DMS 202 that provides an understanding of abdominal and peripheral venous ultrasound testing by offering hands-on training in the classroom with vascular ultrasound equipment. Various venous testing techniques and scanning are demonstrated to the students. Under the guidance of the instructor, the students will practice these techniques on fellow students. Proper techniques in these testing modalities are reviewed along with proper identification of the venous system.

Prerequisite: Admission to Diagnostic Medical Sonography program and concurrent enrollment required in DMS 202.

1 Semester hour

Lecture/Lab Hours: 2 lab/week