DIAGNOSTIC MEDICAL IMAGING SONOGRAPHY

DMIS 1100
Intro to Diagnostic Medical Sonography
3 Credit Hours
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. (2 lecture hours, 2 lab hours)

DMIS 1101
Sonographic Physics & Instrumentation I
3 Credit Hours
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 Imaging Sonography program or consent of instructor. (2 lecture hours, 2 lab hours)

DMIS 1102
Sonographic Physics & Instrumentation II
3 Credit Hours
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: Admission to Diagnostic Medical Imaging Sonography program and Diagnostic Medical Imaging Sonography 1100 and Diagnostic Medical Imaging Sonography 1101 or consent of instructor. (2 lecture hours, 2 lab hours)

DMIS 1105
Intro to Pathophysiology for Sonographer
2 Credit Hours
Student 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: Health Sciences 1110 with a grade of B or better, or equivalent and Anatomy and Physiology 1552 with a grade of B or better, or equivalent or Anatomy and Physiology 1572 with a grade of B or better, or equivalent or consent of instructor. (2 lecture hours)

DMIS 1110
Patient Care Skills for Sonographers
2 Credit Hours
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: Health Sciences 1110 with a grade of B or better, or equivalent or concurrent enrollment in Health Sciences 1110 and Anatomy and Physiology 1552 with a grade of B or better, or equivalent or concurrent enrollment in Anatomy and Physiology 1552 or Anatomy and Physiology 1572 with a grade of B or better, or equivalent or concurrent enrollment in Anatomy and Physiology 1572. (1 lecture hour, 2 lab hours)

DMIS 1112
Clinical Education II
3 Credit Hours
Students will participate in a clinical experience in Sonography at a health care institution. Students will apply concepts and skills learned in DMIS courses at the health care institution. Prerequisite: Admission to Diagnostic Medical Imaging Sonography program is required. Diagnostic Medical Imaging Sonography 1100 with a grade of C or better, or equivalent and Diagnostic Medical Imaging Sonography 1101 with a grade of C or better, or equivalent and Diagnostic Medical Imaging Sonography 1120 with a grade of C or better or equivalent. Clinical Education Sonography courses from other colleges under approved cooperative agreements.

DMIS 1113
Clinical Education III
3 Credit Hours
Students will continue Sonography clinical experience in a health care institution. Students will continue applying concepts and skills learned in DMIS courses at the health care institution. Prerequisite: Admission to program is required and Diagnostic Medical Imaging Sonography 1102, Diagnostic Medical Imaging Sonography 1112, Diagnostic Medical Imaging Sonography 1121 and Diagnostic Medical Imaging Sonography 1131 or consent of instructor or Clinical Education Sonography courses from other colleges under approved cooperative agreements.

DMIS 1114
Clinical Education IV
3 Credit Hours
Students will continue Sonography clinical experience in a health care institution. Students will continue applying concepts and skills learned in DMIS courses at the health care institution. Prerequisite: Admission to the program is required and Diagnostic Medical Imaging Sonography 1113, with a grade of C or better, or equivalent or Clinical Education Sonography courses from other colleges under approved cooperative agreements.

DMIS 1120
Sonographic Cross-Sectional Anatomy
3 Credit Hours
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 Imaging Sonography program or consent of instructor. (2 lecture hours, 2 lab hours)

DMIS 1121
Fundamentals of OB/GYN I
3 Credit Hours
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 program is required or consent of instructor. (2 lecture hours, 2 lab hours)
DMIS 1122
*Fundamentals of OB/GYN II*
3 Credit Hours
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: Admission to program is required and Diagnostic Medical Imaging Sonography 1121 with a grade of C or better, or equivalent or consent of instructor. (2 lecture hours, 2 lab hours)

DMIS 1131
*Abdomen/Superficial Structures I*
3 Credit Hours
Students will be introduced to abdominal cross-sectional anatomy with the use of ultrasound. Topics will include vascular and abdominal organ systems with normal and pathologic conditions. Ultrasound evaluations will include upper abdominal organs such as liver, and gallbladder and biliary tree, spleen, pancreas, great vessels, scrotum, prostate, and urinary tract. Prerequisite: Admission to program is required and Diagnostic Medical Imaging Sonography 1100 with a grade of C or better, or equivalent and Diagnostic Medical Imaging Sonography 1101 with a grade of C or better, or equivalent and Diagnostic Medical Imaging Sonography 1120 with a grade of C or better, or equivalent. (2 lecture hours, 2 lab hours)

DMIS 1132
*Abdomen/Superficial Structures II*
2 Credit Hours
Continuation of anatomy and pathology of the abdominal and superficial structures in ultrasound imaging. Areas include: thyroid, parathyroid, breast, neck, thorax, gastrointestinal tract, musculoskeletal system, extracranial vessels and neonatal brain. Introduction of color flow Doppler techniques. Prerequisite: Admission to Diagnostic Medical Imaging Sonography program and Diagnostic Medical Imaging Sonography 1121, Diagnostic Medical Imaging Sonography 1131 and Diagnostic Medical Imaging Sonography 1141 or consent of instructor. (2 lecture hours)

DMIS 1140
*Fundamentals of Breast Sonography*
2 Credit Hours
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: Admission to program is required. Diagnostic Medical Imaging Sonography 1102 with a grade of C or better, or equivalent and Diagnostic Medical Imaging Sonography 1110 or consent of instructor. (2 lecture hours)

DMIS 1141
*Case Study Critique I*
1 Credit Hour
Students will present diagnostic medical ultrasound cases of normal and abnormal anatomy. Students will discuss imaging techniques and image quality of cases presented. Prerequisite: Admission to program is required and Diagnostic Medical Imaging Sonography 1100 with a grade of C or better, or equivalent and Diagnostic Medical Imaging Sonography 1101 with a grade of C or better, or equivalent or consent of instructor. (1 lecture hour)

DMIS 1142
*Case Study Critique II*
1 Credit Hour
Students will present advanced diagnostic medical ultrasound cases of normal and abnormal anatomy. Students will discuss imaging techniques and image quality of cases presented. Prerequisite: Admission to program is required and Diagnostic Medical Imaging Sonography 1131 with a grade of C or better, or equivalent and Diagnostic Medical Imaging Sonography 1132 with a grade of C or better, or equivalent and Diagnostic Medical Imaging Sonography 1141 with a grade of C or better, or equivalent or consent of instructor. (1 lecture hour)

DMIS 1151
*Hands-On Scanning Lab 1*
1 Credit Hour
Overview and emphasis of principles taught in DMIS-1100 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. (2 lab hours)

DMIS 1152
*Hands-On Scanning Lab 2*
1 Credit Hour
Course will expand on principles of Abdominal/Superficial Structures and Obstetrics/Gynecology. Students perform advanced hands-on scanning techniques utilizing proper manipulation of transducer probes. Prerequisite: Admission to program is required. Concurrent enrollment is required in Diagnostic Medical Imaging Sonography 1151 or consent of instructor. (2 lab hours)

DMIS 1153
*Hands-On Scanning Lab 3*
1 Credit Hour
Continuation of principles taught in Diagnostic Medical Imaging Sonography 1152 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: Admission to Diagnostic Medical Imaging Sonography program and Diagnostic Medical Imaging Sonography 1152 or consent of instructor (2 lab hours)

DMIS 1154
*Hands-On Scanning Lab 4*
1 Credit Hour
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: Admission to the program is required. Diagnostic Medical Imaging Sonography 1153 with a grade of C or better, or equivalent or consent of instructor. (2 lab hours)
DMIS 1160
Legal Issues of Health Care-Sonography
1 Credit Hour
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: Admission to the program is required. Diagnostic Medical Imaging Sonography 1121 with a grade of C or better, or equivalent and Diagnostic Medical Imaging Sonography 1131 with a grade of C or better, or equivalent or consent of instructor. (1 lecture hours)

DMIS 1820
Selected Topics I
1 to 3 Credit Hours
Introductory exploration and analysis of selected topics with a specific theme indicated by course title listed in college class schedule. This course may be taken four times for credit as long as different topics are selected. Prerequisite: Currently enrolled in the Diagnostic Medical Imaging Sonography Program or consent of instructor. (1 to 3 lecture hours)

DMIS 1822
Selected Topics III
1 to 3 Credit Hours
Introductory exploration and analysis of selected topics with a specific theme indicated by course title listed in college class schedule. This course may be taken four times for credit as long as different topics are selected. Prerequisite: Currently enrolled in the Diagnostic Medical Imaging Sonography Program or consent of instructor. (1 to 3 lecture hours)

DMIS 1823
Selected Topics IV
1 to 3 Credit Hours
Introductory exploration and analysis of selected topics with a specific theme indicated by course title listed in college class schedule. This course may be taken four times for credit as long as different topics are selected. Prerequisite: Admission to Diagnostic Medical Imaging Sonography program or consent of instructor. (1 to 3 lecture hours)

DMIS 1824
Selected Topics V
1 to 2 Credit Hours
Introductory exploration and analysis of selected topics with a specific theme indicated by course title listed in college class schedule. This course may be taken four times for credit as long as different topics are selected. Prerequisite: Currently enrolled in the Diagnostic Medical Imaging Sonography program or consent of instructor. (1 to 2 lecture hours)

DMIS 1826
Selected Topics VII
1 Credit Hour
Introductory exploration and analysis of selected topics with a specific theme indicated by course title listed in the college class schedule. This course may be taken four times for credit as long as different topics are selected. Prerequisite: Currently enrolled in the Diagnostic Medical Imaging Sonography program or consent of instructor. (1 lecture hour, 2 to 4 lab hours)

DMIS 1840
Independent Study
1 to 4 Credit Hours
Exploration and analysis of topics within the discipline to meet individual student-defined course description, goals, objectives, topical outline and methods of evaluation in coordination with and approved by the instructor. This course may be taken four times for credit as long as different topics are selected. Prerequisite: Consent of instructor is required. (1 to 4 lecture hours)

DMIS 2200
Vascular Hemodynamics and Physics
2 Credit Hours
A review of the circulatory system blood as fluid, and how blood circulates. A description of the various forms of energy and how they affect blood movement will be covered. The principles of blood movement, conduits and circulation will be examined along with laboratory demonstration of these principles. The Doppler effect and the Doppler will be explained and applied. Various Doppler Instruments used to assess blood flow in vascular ultrasound will be reviewed and utilized in class and lab. Prerequisite: Admission to Diagnostic Medical Imaging Sonography program is required. (1 lecture hour, 2 lab hours)

DMIS 2201
Abdominal and Peripheral Arterial
3 Credit Hours
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 Imaging Sonography program and concurrent enrollment required in Diagnostic Medical Imaging Sonography 2221 or consent of instructor. (3 lecture hours)

DMIS 2203
Cerebrovascular Ultrasound
2 Credit Hours
Overview of the purpose and composition of blood vessels and the physiology of the cerebrovascular system. Cerebrovascular anatomy are reviewed. Disease 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 patent management are included. Prerequisite: Admission to Diagnostic Medical Imaging Sonography program and concurrent enrollment required in Diagnostic Medical Imaging Sonography 2223 or consent of instructor. (2 lecture hours)

DMIS 2204
Abdominal and Peripheral Venous
2 Credit Hours
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 Imaging Sonography program and concurrent enrollment required in Diagnostic Medical Imaging Sonography 2224 or consent of instructor. (2 lecture hours)

DMIS 2212
**Clinical Education - Vascular Imaging 1**
3 Credit Hours
Students will participate in a clinical experience in vascular sonography at a health care institution. Students will apply concepts and skills learned in DMIS vascular courses at the health care institution. Prerequisite: Admission to the program is required. Clinical Education Vascular Sonography courses from other colleges under approved cooperative agreements.

DMIS 2213
**Clinical Education - Vascular Imaging 2**
3 Credit Hours
Students will continue vascular sonography clinical experience in a health care institution. Students will continue applying concepts and skills learned in DMIS vascular courses at the health care institution. Prerequisite: Admission to the program is required and Diagnostic Medical Imaging Sonography 2212 with a grade of C or better, or equivalent or Clinical Education Vascular Sonography courses from other colleges under approved cooperative agreements.

DMIS 2221
**Abdominal & Peripheral Arterial Hands-On**
1 Credit Hour
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 DMIS-2201. 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 Imaging Sonography program and concurrent enrollment in Diagnostic Medical Imaging Sonography 2201. (2 lab hours)

DMIS 2223
**Cerebrovascular Ultrasound Hands-On Scan**
1 Credit Hour
Continuation of Diagnostic Medical Imaging Sonography 2203 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 Diagnostic Medical Imaging Sonography 2203. (2 lab hours)

DMIS 2224
**Abdominal & Peripheral Venous Hands-On**
1 Credit Hour
Continuation of Diagnostic Medical Imaging Sonography 2204 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 Imaging Sonography program and concurrent enrollment required in Diagnostic Medical Imaging Sonography 2204. (2 lab hours)

DMIS 2280
**Sonographic Physics Registry and Review**
1 Credit Hour
Intensive review of topics taught in Diagnostic Medical Imaging 1101 and 1102. Preparation for taking the American Registry of Diagnostic Medical Sonography certificate examination. Review of physical principles of sound and sonographic instrumentation. Principles of propagation of ultrasound through tissues, transducers, pulse-echo instruments, image storage and display. Review of Doppler ultrasound, image artifacts and quality management. This course can only be taken on a pass/fail basis. Prerequisite: Admission to Diagnostic Medical Imaging Sonography program and Diagnostic Medical Imaging Sonography 1102 or consent of instructor. (1 lecture hour)

DMIS 2285
**Clinical Sonographic Registry and Review**
1 Credit Hour
Intensive review of topics taught in Diagnostic Medical Imaging Sonography 1121, 1122, 1131 and 1132. Preparation for taking the American Registry of Diagnostic Medical Sonography certification examination. Review of Diagnostic Medical Sonography applications in the specialties of abdominal/superficial structures and obstetrics/gynecology. This course can only be taken on a pass/fail basis. Prerequisite: Admission to Diagnostic Medical Imaging Sonography program and Diagnostic Medical Imaging Sonography 1121, 1122, 1131, and 1132 or consent of instructor. (1 lecture hour)

DMIS 2860
**Internship (Career & Technical Ed)**
1 to 4 Credit Hours
Course requires participation in Career and Technical Education work experience with onsite supervision. Internship learning objectives are developed by student and faculty member, with approval of employer, to provide appropriate work-based learning experiences. Credit is earned by working a minimum of 75 clock hours per semester credit hour, up to a maximum of four credits. Prerequisite: Consent of instructor and 2.0 cumulative grade point average; 12 semester credits earned in a related field of study; students work with Career Services staff to obtain approval of the internship by the Dean from the academic discipline where the student is planning to earn credit.

DMIS 2865
**Internship Advanced (Career & Tech Ed)**
1 to 4 Credit Hours
Continuation of Internship (Career and Technical Education). Course requires participation in Career & Technical Education work experience with onsite supervision. Internship learning objectives are developed by student and faculty member, with approval of employer, to provide appropriate work-based learning experiences. Credit is earned by working a minimum of 75 clock hours per semester credit hour, up to a maximum of four credits. Prerequisite: Consent of instructor and 2.0 cumulative grade point average; 12 semester credits earned in a related field of study; students work with Career Services staff to obtain approval of the internship by the
Dean from the academic discipline where the student is planning to earn credit.