

# DIAGNOSTIC MEDICAL SONOGRAPHY (DMSC)

**DMSC 4300 Introduction to Sonography and Patient Care.** An introduction to the fundamental responsibilities and considerations of the diagnostic medical sonography professional. Topics include; the history of diagnostic medical sonography, sonographic terminology, knobology, biomechanics, ergonomics, scope of practice, accreditation processes, medical ethics, medical law, maintaining health records, pharmacology, infection control, patient transfer methods, obtaining patient history, and vital signs. 2 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Fall Term)

**DMSC 4301 Fundamentals of Sonography.** (Formerly 301) Orientation to basic ultrasound equipment, instrumentation and transducers, acoustic energy, scanning planes and techniques, anatomy identification, image orientation, and terminology. This course must be passed to continue into the Fall semester of the DMS program. 3 semester credit hour/s.

**Campus:** LISLE

**DMSC 4302 Management and Methods of Patient Care.** (Formerly 302) Review of patient care techniques for the healthcare professional. Medical emergencies and patient transfer, infection control and body substance isolation are discussed. Medical ethics and hospital administration lectures are included. 1 semester credit hour/s.

**Campus:** LISLE

**DMSC 4303 Sectional Anatomy for Sonographers.** (Formerly 303) Study of anatomy of the abdomen, pelvis, and thoracic cavities, the extremities, and the cervical area. Focus is on cross-sectional and 3-dimensional relationships. 2 semester credit hour/s.

**Campus:** LISLE

**DMSC 4304 Abdomen Sonography w/Lab.** (Formerly 304) Study of normal abdominal anatomy and sonographic appearances. Review of physiologic function and correlation of laboratory data. Integration of radiology reports, patient history and procedures to effectively perform a diagnostic exam of an organ. Sonographic methods to visualize pediatric and adult abdomen are discussed. Lab sessions with practicals in scanning techniques are an integral part of the course. 4 semester credit hour/s.

**Campus:** LISLE

**DMSC 4305 Obstetrics-Gynecology Sonography.** (Formerly 305) Study of obstetrical and gynecological anatomy with clinical applications and sonographic methods used to visualize pelvic organs, pregnant uterus and related structures. Discussion of embryogenesis and a review of the reproductive cycle is included. Normal sonographic patterns are studied. 3 semester credit hour/s.

**Campus:** LISLE

**DMSC 4306 Clinical Education I.** (Formerly 306) Application of the principles of ultrasound in a hospital setting under the supervision of a qualified registered sonographer. Emphasis on liver, pancreas, gallbladder, kidneys, obstetrics, and pelvic areas. Pass/Fail grading. 2 semester credit hour/s. Department Consent Required.

**Designation:** Engaged Learning

**Campus:** LISLE

**DMSC 4307 Principles of Ultrasound Physics I.** (Formerly 307) Introduction and study of the fundamental principles of diagnostic ultrasound physics. Study of acoustic energy and diagnostic ultrasound equipment instrumentation, artifacts and quality control. 3 semester credit hour/s.

**Campus:** LISLE

**DMSC 4308 Obstetrics-Gynecology Pathology.** (Formerly 308) Presentation of sonographic appearances of pathology relating to the pelvic organs, pregnant uterus and related structures. Fetal congenital anomalies and sonographic appearances are examined. Review of female hormone and reproductive cycle. Interpretation of patient charts, relating clinical history, lab and radiology reports and surgical procedures to pathologic processes is studied. Discussion of differentiating characteristics of various pathologies and any related organ involvement. 4 semester credit hour/s.

**Campus:** LISLE

**DMSC 4309 Pathophysiology.** (Formerly 309) Review of organ physiology processes and cellular involvement in various pathologic conditions. Major organ systems and related pathologies are discussed. 2 semester credit hour/s.

**Campus:** LISLE

**DMSC 4310 Abdomen Pathology.** (Formerly 310) Sonographic appearances of pathology relating to abdominal organs and superficial parts are studied. Discussion of differentiating characteristics and pathologic processes of various diseases. Pathology related organ involvement is identified. Interpretation of patient charts, relating clinical history, lab and radiology reports and surgical procedures to pathologic processes. Pediatric pathologies are discussed. 3 semester credit hour/s. Department Consent Required.

**Campus:** LISLE

**DMSC 4311 Clinical Education II.** (Formerly 311) This course emphasizes clinical experience progression under the supervision of faculty, sonography staff, and clinical instructor. Continued practicum in the clinical applications of abdominal sonography, female pelvis, and obstetrical application. Effective communication, operation of equipment, patient care and technical skills developed. Pass/Fail grading. 3 semester credit hour/s. Department Consent Required.

**Designation:** Engaged Learning

**Campus:** LISLE

**DMSC 4312 Principles of Ultrasound Physics II.** (Formerly 312) Continuation of the study of the fundamental principles of diagnostic ultrasound physics and instrumentation. Study of Doppler physics, spectral and color flow principles and instrumentation, artifacts and QA, plus a review of bioeffects, safety, and AIUM acoustic energy guidelines. 2 semester credit hour/s. Department Consent Required.

**Campus:** LISLE

**DMSC 4313 Ultrasound Image Critique.** (Formerly 313) Study of film critique, technical factors, and interpretation of quality sonographic images. Review of sonographic terminology, image quality factors, scanning protocols and techniques, and normal sonographic appearances of abdominal, OB\_GYN, and vascular structures. Integration of clinical history and related organ systems to aid in the interpretation of images. Discussion of abnormal sonographic images and correlation of clinical data to develop diagnostic criteria. 1 semester credit hour/s. Department Consent Required.

**Campus:** LISLE

**DMSC 4314 Clinical Education III.** (Formerly 314) The student continues to improve scanning skills under the supervision of faculty, sonography staff and clinical instructor. Emphasis remains on abdominal, small parts, and obstetrical-gynecological sonography. The student will have an opportunity to refine skills and increase self-confidence through progressively more independent scanning. Pass/Fail grading. 3 semester credit hour/s. Department Consent Required.

**Designation:** Engaged Learning

**Campus:** LISLE

**DMSC 4315 Introduction to Pediatrics and Vascular Imaging.** (Formerly 315) Introduction to neonatal and pediatric sonographic examinations and pathologies. Peripheral vascular anatomy, protocols, and pathologies are discussed. Included is the practice of carotid artery and lower extremity venous peripheral vascular exams under direct supervision in the laboratory setting. 1 semester credit hour/s. Department Consent Required.

**Campus:** LISLE

**DMSC 4316 Speciality Sonography.** (Formerly 316) Study of various obstetrical, abdominal, and superficial parts pathology, including neonatal procedures, GI tract, soft tissues, liver transplants, and invasive procedures. Presentation of pathologic processes, sonographic appearances, and clinical history. Administrative duties pertinent to managing a diagnostic ultrasound department are presented. 2 semester credit hour/s. Department Consent Required.

**Campus:** LISLE

**DMSC 4317 Clinical Education IV.** (Formerly 317) In this final period of clinical study, the student demonstrates full competency and progresses to full independence under the supervision of sonography staff, clinical instructor, and clinical coordinator. Emphasis on abdominal, small parts, OB\_GYN pathology identification, diagnosis, and related organ involvement documentation. Rotations in the practice of peripheral vascular exams, pediatrics, breast imaging, and other specialties within the field may be arranged. Pass/Fail grading. 4 semester credit hour/s. Department Consent Required.

**Designation:** Engaged Learning

**Campus:** LISLE

**DMSC 4318 Registry Review.** (Formerly 318) A review of abdomen, OB\_GYN, and physics information pertinent to taking the American Registry of Diagnostic Medical Sonography national certification examinations. Registry applications are provided, and mock registry exams are part of the review process. 2 semester credit hour/s. Department Consent Required.

**Campus:** LISLE

**DMSC 4320 Abdominal Sonography I.** The first of a multi-course sequence covering normal anatomy, physiology, and pathology of the abdominal organs and superficial structures. Emphasis will be placed on the sonographic features, clinical presentation, and scan protocol of the great vessels, liver, biliary system, pancreas, gastrointestinal tract, and the abdominal wall. 2 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Fall Term)

**DMSC 4321 Abdominal Sonography I Lab.** Application of ultrasound scan techniques and imaging protocols of the great vessels, liver, pancreas, biliary system and pleural space. 1 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Fall Term)

**DMSC 4322 Abdominal Sonography II.** The continuation of DMS 4320 with the introduction of the anatomy, physiology, pathology, and pathophysiology of the spleen, thyroid, urinary system, retroperitoneum, scrotum, prostate, and the musculoskeletal system. An emphasis will be placed on the sonographic features, clinical presentations, and scan protocols. 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Spring Term)

**DMSC 4323 Abdominal Sonography II Lab.** Application of ultrasound scan techniques and imaging protocols of the spleen, thyroid, urinary system, prostate, salivary glands, Achilles' tendon, water bath scanning, stand-off pads. 1 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Spring Term)

**DMSC 4330 Obstetrics and Gynecology Sonography I.** The first of a multi-course sequence covering the normal anatomy, physiology, pathology, and pathophysiology of the female pelvis including embryology and first trimester fetal development, fetal anomalies, and the management of maternal and fetal disease from the sonographic assessment perspective. 2 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Fall Term)

**DMSC 4331 Obstetrics and Gynecology Sonography I Lab.** Application of ultrasound scan techniques and imaging protocols of the female pelvis including the vagina, cervix, uterus, ovaries, and adnexa. 1 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Fall Term)

**DMSC 4332 Obstetrics and Gynecology Sonography II.** The continuation of DMS 4330 with the introduction of the normal anatomy, anomalies, pathology, and pathophysiology of the developing human fetus and female pelvis in the second and third trimester. Emphasis will be placed on the sonographic features, clinical presentations, and scan protocols 3 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Spring Term)

**DMSC 4333 Obstetrics and Gynecology Sonography II Lab.** Application of ultrasound scan techniques and imaging protocols of the gravid female pelvis. 1 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Spring Term)

**DMSC 4350 Vascular Sonography I.** The first of a multi-course sequence assessing the anatomy, pathology, and related hemodynamics of the vascular system from the sonographic imaging perspective. Pathology, clinical signs, and systems, applicable laboratory values, pathophysiology, and differential diagnosis will be presented. 2 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Summer Term)

**DMSC 4351 Vascular Sonography I Lab.** Application of ultrasound scan techniques and imaging protocols of the upper and lower extremity arterial systems and the extracranial duplex. 1 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Summer Term)

**DMSC 4352 Vascular Sonography II.** The second of a multi-course sequence assessing the anatomy, pathology, and related hemodynamics of the vascular system from the sonographic imaging perspective. Pathology, clinical signs, and systems, applicable laboratory values, pathophysiology, and differential diagnosis will be presented. 2 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Fall Term)

**DMSC 4353 Vascular Sonography II Lab.** Application of ultrasound scan techniques and imaging protocols of the upper and lower extremity venous systems, liver Doppler, and renal Doppler. 2 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Fall Term)

**DMSC 4360 Pediatric and Breast Sonography.** An introduction to the anatomy, anomalies, pathology, and pathophysiology of the pediatric abdomen, pediatric gastrointestinal tract, neonatal spine, infant hips, neurosonography, and breast. Comparative diagnostic imaging modality relating to anatomy and pathology of the breast will also be reviewed. 1 semester credit hour/s.

**Campus:** LISLE (Typically Offered: Spring Term)

**DMSC 4370 Sonography Principles and Instrumentation I.** An introduction to the fundamentals and characteristics of physics principles applied in the use of diagnostic medical sonography. Basic theories of physics and instrumentation are discussed and reviewed with an emphasis on clinical application including; sound wave parameters, pulsed waves, intensity, interactions of sound waves and media, range equation, transducer construction, beam focusing, axial resolution, lateral resolution, and two-dimensional imaging. 2 semester credit hour/s.  
**Campus:** LISLE (Typically Offered: Fall Term)

**DMSC 4371 Sonography Principles and Instrumentation II.** The continuation of DMS 4370 with the introduction of advanced theories of physics and instrumentation including; Doppler physics, hemodynamics, dynamic range, image artifacts, contrast agents, and real-time imaging. 2 semester credit hour/s.  
**Campus:** LISLE (Typically Offered: Spring Term)

**DMSC 4372 Sonography Principles and Instrumentation III.** The continuation of DMS 4371 with the introduction to optimizing the Doppler image, quality assurance, bioeffects, and ultrasound artifacts. 1 semester credit hour/s.  
**Campus:** LISLE (Typically Offered: Summer Term)

**DMSC 4380 Diagnostic Medical Sonography Seminar.** This course presents an integrated coverage of ultrasound topics, as related to image production and evaluation, ultrasound procedures, and patient care and management. Emphasis is placed on the development of skills, attitudes, and knowledge necessary to exercise independent judgment and discretion in the performance of ultrasound imaging procedures. 2 semester credit hour/s.  
**Campus:** LISLE (Typically Offered: Fall Term)

**DMSC 4382 Professional Research.** This course emphasizes both research and accreditation procedures of a sonography program with original research presented using oral and graphic methods as a group project. 2 semester credit hour/s.  
**Designation:** Writing Intensive  
**Campus:** LISLE (Typically Offered: Fall Term)

**DMSC 4390 Clinical Education I.** Practical implementation of the sonographic imaging and patient care process in a clinical setting where students will observe, assist, and perform a variety of sonographic examinations and procedures under the guidance of a registered diagnostic sonographer. Emphasis will be placed on abdomen, superficial structures, obstetric, gynecology, and vascular exams. 3 semester credit hour/s.  
**Campus:** LISLE (Typically Offered: Fall Term)

**DMSC 4391 Clinical Education II.** Practical implementation of the sonographic imaging and patient care process in a clinical setting where students will observe, assist, and perform a variety of sonographic examinations and procedures under the guidance of a registered diagnostic sonographer. Emphasis will be placed on abdomen, superficial structures, obstetric, gynecology, and vascular exams. 3 semester credit hour/s.  
**Campus:** LISLE (Typically Offered: Spring Term)

**DMSC 4392 Clinical Education III.** A continuation of DMS 4391 that builds on the practical implementation of the sonographic imaging and patient care processes in a clinical setting where student observe, assist, and perform a variety of sonographic examinations under the guidance of a registered diagnostic sonographer. Emphasis will be placed on abdomen, superficial structures, obstetric, gynecology, and vascular exams. 3 semester credit hour/s.  
**Campus:** LISLE (Typically Offered: Summer Term)

**DMSC 4393 Clinical Education IV.** A continuation of DMS 4392 that builds on the practical implementation of the sonographic imaging and patient care processes in a clinical setting where student observe, assist, and perform a variety of sonographic examinations under the guidance of a registered diagnostic sonographer. Emphasis will be placed on abdomen, superficial structures, obstetric, gynecology, and vascular exams. The opportunity to rotate through specialty clinics will present including; pediatric, musculoskeletal, breast, interventional radiology, and the vascular lab. 4 semester credit hour/s.  
**Campus:** LISLE (Typically Offered: Fall Term)