

## Course Curriculum Description

### Semester 1 – 15 weeks

- **Orientation – 101**  
This class is an introduction to sonography which includes a basic anatomy review, introduction to sonographic scanning techniques and physical principles. This curriculum includes, but is not limited to, Introduction to Sonographic Terminology, Abdomen, OB-GYN, Vascular, Nursing Care, the role of the sonographer and medical/legal issues. Scan labs are provided to develop a comfort level with the transducer in coordination with the didactic classes.
- **Ultrasound Physics and Instrumentation I - 102 –**  
This course will cover the physics parameters of ultrasound. It will prepare the student for the taking of the Ultrasound Physics Boards and give understanding of general physics that is required for taking the Ultrasound Physics/Vascular Physics Boards.
- **Obstetrical Sonography I - 103 –**  
This course covers the pathophysiology of pregnancy, embryology and the development of the fetus as visualized on ultrasound during the first trimester to include: normal, abnormal and ectopic pregnancy. This course will familiarize the student with the anatomy demonstrated by ultrasound during the first trimester and covers bioeffects and safety in obstetrical ultrasound diagnostic use.
- **Gynecological Sonography I - 104 –**  
This course includes a presentation of gynecological terminology, normal female anatomy and pathophysiology. The course will cover the bony pelvis, vascular anatomy, muscles, and ligaments.
- **Vascular Sonography I - 105 –**  
This course includes a presentation of vascular terminology, normal and abnormal carotid anatomy, characteristics of pathology, and Introduction to Doppler and duplex examination, both normal and abnormal. It will also include an introduction to the Vascular Lab.
- **Abdominal Sonography I - 106 –**  
This course introduces anatomy, physiology, pathology and scanning techniques of the biliary system and pancreas, both normal and abnormal.
- **Clinical Education I - 107 –**  
The student receives clinical education and hands on experience. They begin clinical competencies and to produce images with instruction, guidance and supervision.

### Semester 2 – 16 weeks

- **Ultrasound Physics and Instrumentation II - 202 –**  
This course will cover instruction of different transducers, instrumentation, display, artifacts, Doppler principles and noted bio-effects of diagnostic ultrasound. This course will continue to prepare the student for taking the Ultrasound Physics Boards and give understanding of general physics that is required for taking the Ultrasound Physics/Vascular Physics Boards. (SPI)

- **Obstetrical Sonography II - 203 –**  
This course will cover the normal anatomy and pathophysiology of the fetus as visualized on ultrasound during the second and third trimesters, along with the fetal presentation. The course also shows the protocol for a second and third trimester complete ultrasound exam, and will familiarize the student with the second and third trimester anatomy as demonstrated on ultrasound.
- **Gynecological Sonography II - 204 –**  
This course will cover the reproductive menstrual cycle, normal anatomy and pathophysiology of the post menstrual pelvis, GYN ultrasound exams and patient care. It will also discuss pelvic masses in pregnancy and gestational trophoblastic disease.
- **Vascular Sonography II - 205 –**  
This course will cover the anatomy, physiology and pathology of the upper and lower extremity venous and arterial systems, both normal and abnormal. This course will also cover the vascular principles of Hemodynamics.
- **Abdominal Sonography II – 206 –**  
This course introduces the anatomy, physiology, pathophysiology and scanning techniques of the liver, abdominal vasculature, spleen and thyroid, both normal and abnormal.
- **Clinical Education II - 207 –**  
Students continue to gain experience in observation and hands on experience through the performance of ultrasound procedures with direct patient contact under the supervision of a Register Sonographer. Students continue to complete clinical competencies.

### **Semester 3 – 16 weeks**

- **Ultrasound Physics and Instrumentation III - 302 –**  
This course will cover the physics parameters of ultrasound to include artifacts, quality assurance, bio-effects and AIUM guidelines for ultrasound usage. It will prepare the student for the taking of the Ultrasound Physics/Vascular Physics Boards.
- **Obstetrical Sonography III - 303 –**  
This course will cover normal anatomy and pathophysiology of the placenta, amniotic fluid, umbilical cord and cervix. This course will introduce the student to multiple gestations and the abnormal fetal neural axis, along with biophysical profiles, normal and abnormal GU tract, and chromosome abnormalities and syndromes.
- **Gynecological Sonography III - 304 –**  
This course will cover the benign and malignant uterine and ovarian anatomy and pathophysiology. It will also discuss congenital anomalies, pelvic doppler, infertility and treatment, the pediatric pelvis, OB/GYN procedures, and the post-partum uterus.
- **Vascular III - 305 –**  
This course will cover the anatomy, physiology and pathology of the upper and lower arterial system, both normal and abnormal, along with vascular statistics and alternative testing measures. It will also discuss normal and abnormal transcranial Doppler imaging.

- **Abdominal Sonography III - 306 –**  
This course introduces the student to the anatomy, physiology, pathophysiology and scanning techniques of the upper and lower urinary track, retroperitoneum, scrotum, and penis, both normal and abnormal.
- **Clinical Education III - 307 –**  
The students gain continued clinical experience and knowledge in the performance of ultrasound procedures. They have both direct and indirect supervision as they perform ultrasound procedures and complete competencies. Sonographers review sonographic exams performed by students prior to submission to Radiologists for interpretation.

#### **Semester 4 – 16 weeks**

- **Ultrasound Physics and Instrumentation Registry Review V - 402 –**  
This class is to review the physical principle and instrumentation; it is also to prepare the class for National Registry Board testing. This course will also cover the physical principle related to 3D ultrasonography.
- **Obstetrical Sonography IV - 403 –**  
This class will cover normal and abnormal musculoskeletal, face and neck, and GI tract abnormalities and syndromes. An overview of OB Doppler and maternal complications in fetal ultrasound is presented.
- **Abdominal Sonography IV - 406 –**  
This course will cover the anatomy, physiology, pathology and scanning techniques of the prostate, GI system, non-cardiac chest, abdominal wall, and transcranial doppler imaging, both normal and abnormal. The course will also discuss the use of sonography in emergency medicine (including biopsy and surgery) and musculoskeletal imaging.
- **Clinical Education IV - 407 –**  
The students continue to gain clinical experience and knowledge in the performance of ultrasound procedures in a variety of settings under the supervision of registered sonographers.
- **Pediatric Sonography - 408 –**  
The course is to introduce the role of ultrasound in the pediatric patient to include the anatomy, physiology, and pathology of the abdomen and pelvis, both normal and abnormal. This course also includes the brain and the spinal cord. Interesting cases and a pediatric clinical rotation are included in this program.
- **Neurosonography - 409 –**  
This course is to inform the students of the normal anatomy of the neonatal brain, to discuss anomalies as associated with the central nervous system, to discuss neonatal acquired pathology and to discuss the standard views used to assess the changes associated with the anomalies.
- **Breast Sonography – 410 –**  
This course will cover the anatomy, physiology, pathology and scanning techniques of the female breast.

## Semester 5 – 16 weeks

- **Obstetrical and Gynecological Sonography & Review V - 503 –**  
This class informs the students of the information and skills necessary to successfully perform an obstetrical ultrasound including normal anatomy of the fetal neural axis, gastrointestinal tract, thorax and heart. The class also discusses the anomalies and pathophysiology associated with the central nervous system, GI system, respiratory system and cardiovascular system to enable the student to recognize the changes, both normal and abnormal. Information from gynecological sonography will also be included including review on the gravid, non-gravid, and postmenopausal pelvis and reproductive system.
- **Vascular Sonography & Review V - 505 –**  
This class will provide information on alternative vascular testing/imaging and vascular statistics. It will also include a review of Vascular Technology principles, along with preparing the students for the National Registry Board Exams in Vascular Technology to include anatomy, physiology, pathology, and scanning techniques, both normal and abnormal.
- **Abdominal Sonography & Review V - 506 –**  
This course will review the Abdominal Sonography I-IV curriculum to include the abdomen and superficial small parts of ultrasound imaging, along with preparing the student for the National Registry Board Examination in Abdomen to include anatomy, physiology, pathology and technical scanning skills.
- **Clinical Education V - 507 –**  
This class is covers technical and professional scanning in obstetrics, gynecology, abdominal imaging and superficial structures. The course also includes overview of all competencies and completion of all required advance-imaging procedures. Reinforcement and correlation of previous clinical skills are emphasized.

### **Special Classes Includes but are not limited to:**

- Interesting Case Studies
- TIPS Procedures
- Biopsies
- CT/US Correlation
- Nuclear Med/US Correlation
- MRI/US Correlation
- HIPPA/Privacy Issues
- Medical/Legal Issues
- Nursing Care Procedures Review
- Incomplete Cervix
- Fetal Growth
- Genetics