AURORA ST. LUKE’S MEDICAL CENTER
SCHOOL OF DIAGNOSTIC MEDICAL SONOGRAPHY
COURSE OVERVIEW

The core curriculum defines several major modules of ultrasound education. All lectures are correlated with scan lab demonstration and practice for each organ system. Each module of instruction includes the following components:

- Terminology
- Gross and sectional anatomy
- Physiology and pathophysiology
- Clinical medicine
- Sonographic pathology
- Sonographic technique

Students will formally present one case study during each semester relative to the material being presented.

Clinical Education

The clinical component of our program allows students to rotate through all aspects of sonography specific to their chosen learning track. Students progress in competence and ability on an individual basis and within the guidelines set forth by program faculty. A predetermined number of competencies specific to each learning concentration must be achieved during the duration of the program.

In addition, specialty rotations have been designed in order to broaden the scope of the student’s clinical experiences.

GENERAL / VASCULAR SONOGRAPHY OPTION
COURSE OUTLINE

Semester I
Introduction to Sonography
Abdominal Sonography I
OB/Gyn Sonography I
Vascular Sonography I
Clinical Education I

Semester II
Abdominal Sonography II
OB/GYN Sonography II
Vascular Sonography II
Sonography Principles & Instrumentation
Clinical Education II

Semester III
OB/GYN Sonography III
Specialized Sonography
Clinical Education III

Semester IV
Introduction to Pediatric Sonography
Seminar in OB/GYN
Vascular III
Introduction to Breast Imaging
Clinical Education IV

Semester V
Introduction to MSK
Seminar in Professional Development
Seminar in Management & Education
Clinical Education V
GENERAL / VASCULAR
SONOGRAPHY OPTION
COURSE DESCRIPTIONS

INTRODUCTION TO SONOGRAPHY
Credits: 3
The focus of this course includes content that emphasizes personal adaptation skills, nursing skills and staff development issues. An introduction to basic sonographic terminology, techniques, ultrasound physics, and scanning techniques form the framework for future study. Lectures are correlated with scan lab demonstration and practice. The student handbook policies and procedures are emphasized.

ABDOMINAL SONOGRAPHY I
Credits: 3
This course focuses on the normal gross, cross-sectional, relational and sonographic anatomy of the upper abdomen to include liver and the biliary tree. Physiology, pathology and related laboratory values are emphasized and correlated with sonographic findings. Lectures are correlated with scan lab demonstration and practice for each organ system.

ABDOMINAL SONOGRAPHY II
Credits: 3
This course focuses on the normal gross, cross-sectional, relational and sonographic anatomy of the upper abdomen to include the pancreas, kidneys, spleen, adrenal glands and retroperitoneum. Physiology, pathology and related laboratory values are emphasized and correlated with sonographic findings. The use and importance of color and spectral Doppler will be emphasized. Lectures are correlated with scan lab demonstration and practice for each organ system.

CLINICAL EDUCATION I - V
Students are scheduled for clinical practicum at participating clinical education centers. Students progress in competence and ability on an individual basis and within the guidelines set forth by program faculty. Students are routinely evaluated on professional growth, personal interactions, and technical ability. A predetermined number of competencies specific to each learning concentration must be achieved during the duration of the program.
Clinical experience rotations include abdominal imaging, OB/GYN, transthoracic cardiac imaging and vascular technology. Sonographic technique is also practiced during routinely scheduled scan lab sessions, which are conducted by the program faculty.
Clinical Education I – V 3 credits each

INTRODUCTION TO BREAST IMAGING
Credits: 3
This course focuses on the normal gross, cross-sectional, relational and sonographic anatomy of the breast. Pathologic findings encountered during these exams will be correlated with possible causative etiologies. Physiology, pathology and related laboratory values are emphasized and correlated with sonographic findings. Lectures are correlated with scan lab demonstration as well as practical clinical experience.
INTRODUCTION TO MSK IMAGING
Credits: 3
This course focuses on the introduction of normal gross, cross-sectional, relational and sonographic anatomy of the musculoskeletal system. Pathologic findings encountered during these exams will be correlated with possible causative etiologies. Physiology and pathology are emphasized and correlated with sonographic findings. Lectures are correlated with scan lab demonstration and practice.

INTRODUCTION TO PEDIATRIC SONOGRAPHY
Credits: 3
This course focuses on the normal gross, cross-sectional, relational and sonographic anatomy of each organ system of the abdomen, pelvis and other structures typically seen in the pediatric and adolescent patient. Normal anatomy and disease processes within the gastrointestinal system of the pediatric and adult patient will also be discussed. Students will become familiar with the clinical symptoms, lab values and specific ultrasound protocols for normal and abnormal cases. Physiology, pathology and related laboratory values are emphasized and correlated with sonographic findings. Lectures are correlated with practical clinical experience.

OB/GYN SONOGRAPHY I
Credits: 3
This course focuses on the normal gross, cross-sectional, relational and sonographic anatomy of the non-gravid female pelvis and embryology of the developing human. Physiology, pathology and related laboratory values are emphasized and correlated with sonographic findings. Lectures are correlated with scan lab demonstration and practice as well as practical clinical experience.

OB/GYN SONOGRAPHY II
Credits: 3
This course focuses on the 1st, 2nd and 3rd trimester gravid uterus and developing fetus. Normal gross, cross-sectional, relational and sonographic anatomy will be discussed. Gestational dating methods and measurements will be presented. Clinical presentation, sonographic signs and associations found in the abnormal 1st trimester and failed pregnancy will be presented. The sonographic presentations of fetal abnormalities found in the 2nd and 3rd trimester is considered. Students will focus on the more common anomalies of the gastrointestinal system, musculoskeletal system, and genitourinary system. Physiology, pathology and related laboratory values are emphasized and correlated with sonographic findings. Lectures are correlated with practical clinical experience.

OB/GYN SONOGRAPHY III
Credits: 3
This course focuses on the sonographic presentations of fetal abnormalities found in the 2nd and 3rd trimester with a focus on the more common anomalies of the central nervous system, the fetal face and neck and the thorax. The normal and abnormal placenta will be presented. At risk and multiple gestation pregnancies will be presented. An introduction to fetal echocardiology will be provided. Physiology, pathology and related laboratory values are emphasized and correlated with sonographic findings.
Lectures are correlated with practical clinical experience.

SEMINAR IN OB/GYN
Credits: 3
This course focuses on congenital anomalies, syndromes and fetal and maternal factors related to high risk pregnancy. The genetic transmission of anomalies will be discussed. The prevalence, prognosis and sonographic appearance of the most common chromosomal anomalies will be considered. The role of sonography in interventional procedures will be discussed. Physiology, pathology and related laboratory values are emphasized and correlated with sonographic findings.

SEMINAR IN PROFESSIONAL DEVELOPMENT
Credits: 3
Senior Project:
The main objective is for the student to apply the academic and clinical knowledge used in this program to develop a senior project. This course is designed to showcase the students’ ever evolving knowledge in sonography. The senior project consists of two parts; an in-depth written paper and oral presentation to your peers.

Preparation for the sonography boards and professionalism review:
The main objective is to provide the student with the opportunity to improve test-taking skills in preparation for the examination of the American Registry for Diagnostic Medical Sonography. Job-hunting, interview skills and resume writing will provide the student with skills needed when seeking employment. An overview of professional behavior and standards will be reviewed at this time

SEMINAR IN MANAGEMENT & EDUCATION
Credits: 3
This course will discuss theories and techniques of research, management, education and applications and sales sonography. Students will learn possible career paths available and understand what that career path job description would entail. Students will chose between management, education, research and applications for their final project and develop a proposal/solution for that career pathway. Students will participate in weekly online discussions regarding the pathways.

SPECIALIZED SONOGRAPHY
Credits: 3
This course focuses on the normal gross, cross-sectional, relational and sonographic anatomy of superficial structures, to include the male pelvis (bladder, prostate and scrotum), the thyroid and parathyroid glands. Pathologic findings encountered during these exams will be correlated with possible causative etiologies. Physiology, pathology and related laboratory values are emphasized and correlated with sonographic findings. Lectures are correlated with scan lab demonstration as well as practical clinical experience.

SONOGRAPHY PRINCIPLES & INSTRUMENTATION
Credits: 3
Course Description:
This course focuses on mathematical principals, the characteristics of sound and the mechanism of sonographic
image production and display. Potential biological effects and safety are discussed together with the practical application of physical concepts.

**VASCULAR SONOGRAPHY I**  
Credits: 3  
This course focuses on the normal gross, relational, cross-sectional and sonographic anatomy of the vascular system to include the aorta, inferior vena cava and lower extremity venous and arterial systems. Mechanisms of disease, unique to the vascular system, as well as the relationship between cardiovascular disease and the health of other organ systems will be discussed. Correlation of laboratory findings and etiologies of disease will be covered. Doppler principles and vascular hemodynamics are presented. Various vascular scanning techniques will be discussed. Lectures are correlated with scan lab demonstration and practice for each system.

**VASCULAR SONOGRAPHY II**  
Credits: 3  
This course focuses on the normal gross, relational, cross-sectional and sonographic anatomy of the vascular system to include the carotid, intracranial vessels and the upper extremity venous and arterial systems. Mechanisms of disease, unique to the vascular system, as well as the relationship between cardiovascular disease and the health of other organ systems will be discussed. Correlation of laboratory findings and etiologies of disease will be covered. Doppler principles and vascular hemodynamics are presented. Various vascular scanning techniques will be discussed. Lectures are correlated with scan lab demonstration and practice for each system.

**VASCULAR SONOGRAPHY III**  
Credits: 3  
This course focuses on the normal and abnormal gross, relational, cross-sectional and sonographic anatomy of the vascular system to include the penile Doppler, abdominal vasculature, transplants and statistical correlation. Treatment options for renal hypertension, liver disease and arterial and venous pathology will be discussed. Mechanisms of disease, unique to the vascular system, as well as the relationship between cardiovascular disease and the health of other organ systems will be discussed. Correlation of laboratory findings and etiologies of disease will be covered. Advanced scanning techniques will be discussed. A short correlation of statistical data and vascular testing will be covered. Lectures are correlated with scan lab demonstration and practice for each system.