LABETTE COMMUNITY COLLEGE BRIEF SYLLABUS

SPECIAL NOTE:
This brief syllabus is not intended to be a legal contract. A full syllabus will be distributed to students at the first class session.

TEXT AND SUPPLEMENTARY MATERIALS USED IN THE COURSE (if any):

Please check with the LCC bookstore http://www.labette.edu/bookstore for the required texts for this class.

COURSE NUMBER: DMS 231

COURSE TITLE: VASCULAR SONOGRPAHY II

SEMESTER CREDIT HOURS: 4

DEPARTMENT: Diagnostic Medical Sonography

DIVISION: Health Science

PREREQUISITES: Successful completion of DMS 230, and DMS 209

COURSE DESCRIPTION:
This course will increase your knowledge and Doppler skills of the cerebrovascular, extremities, abdominal vasculature, transcranial, plethysmography, segmental, ABI's, aortic aneurysms, IVC imaging, venous Doppler evaluation with compression and augmentation, Allen test, Laser vein ablation, radio frequency, invasive vs. noninvasive testing, carotid imaging and evaluating, Raynaud's testing, and all vascular Sonography procedures. Lab scanning and exam competencies will be performed in the lab setting.

COURSE OUTCOMES AND COMPETENCIES:
Students who successfully complete this course will be able to:

1. Describe the normal and abnormal anatomy and variants, function, and Sonographic appearance of the major abdominal vasculature.

- Evaluate the aorta and all arteries for aneurysmal disease. Differentiate between the different types of aneurysms including pseudoaneurysms vs. true aneurysms.
- Use relationship of vascular diagnostic techniques to laboratory values, patient history, and physical examination.
- Distinguish different Doppler flow patterns between portal veins, hepatic veins, and hepatic arteries. Identify hepatopetal vs. hepatofugal flow in the liver.
- Demonstrate knowledge of other vascular procedures emphasizing indications, utility, and limitations of Angiography, Venography, MRA, MR flow meters, CT, Nuclear medicine vascular procedures.

- Identify the splenic artery, renal arteries, renal veins, aortic, inferior vena cava, superior mesenteric artery and vein.
- Produce renal artery velocities compared to the aorta velocities to rule out renal artery stenosis.
- Know and understand clinical vascular diagnostic procedures and recognize appropriate indications for vascular examination.
- Recognize normal waveforms of the vessels including triphasic, biphasic, monophasic, and tardus parvus.
- Demonstrate knowledge of vascular physiology, pathophysiology, and hemodynamics in the different types of vascular disease/dysfunction: iatrogenic, degenerative, inflammatory, traumatic, neoplastic, infectious, obstructive, congenital, metabolic, immunologic, flow changes secondary to cardiac disease, pulmonary disease, pregnancy, inflammatory diseases, intracranial and extracranial disease, and anemia pharmacology.

2. Demonstrate knowledge of normal and abnormal vascular anatomy of the upper and lower extremities.

- Distinguish between normal and abnormal anatomy and flow of the upper arterial and venous extremities.
- Locate a DVT in the upper venous extremity.
- Identify a subclavian steal with retrograde flow in the vertebral arteries.
- Know the normal triphasic waveforms in the upper extremities.
- Compress the vein and augment to help with diagnosis of disease.
- Perform protocol of the upper extremities form proximal subclavian to distal arm.
- Identify the lower extremity vessels in the groin to the foot including iliac, femoral, popliteal, peroneal, and tibias.
- Locate the perforators vs. collaterals in the calves.
- Evaluate valve competency.
- Distinguish between deep and superficial arteries and veins in both upper and lower extremities.
- Differentiate between clinical symptoms to help diagnose artery vs. venous disease.
- Recall echogenicity, and common location for Baker cysts.
- Recall the difference between the cystic, complex, and a solid with vasculature flow masses.
- Perform a complete scanning exam of a bypass graft, post stented, atherectomy, embolectomy and thrombectomy, intravascular, ultrasound, angioscopy, radio frequency, laser vein ablation, and endovascular repair.
- Locate pseudoaneurysms in the groin area due to an angiogram. Compress if needed or use a thrombin injection to clot off the neck of the pseudoaneurysms.
- Utilization of aspirin, types of blood thinner, and Plavix to thin the blood viscosity in the case of artery and vein narrowing.
- Measure any dilatation or narrowing of the arterial walls.

3. Demonstrate knowledge, understanding, and proficiency in the use of quantitative principles applied to vascular testing:

- Perform ankle/brachial pressure ratios
- Discuss segmental pressures and cuff placement. Identify abnormal waveforms.
- Evaluate the resistive index to help with renal transplant acceptance.
- Measure of the variability of blood velocity in a vessel to evaluate pulsatility index.
- Describe normal and abnormal vascular flow patterns and waveform morphology.
- Perform vascular stress testing to diagnose vasoactive relationships.
- Identify different medicines that can cause the vessel to change is size and shape.
- Differentiate and perform different plethysmography testing.

4. Explain proficiency in the performance of physiologic testing (including volume pulse recording, pressure measurements, plethysmography, and stress testing), real- time ultrasound imaging, and Doppler evaluation (pulsed and continuous wave, color, and power flow) as related to the vasculature.

- Perform a complete carotid exam and calculate the internal artery to the common artery for the diagnostic ratio.
- Distinguish between the ICA and ECA waveforms, resistance, and branches of the ECA.
- Identify any type of narrowing from within the vessel or extrinsic pressure like a carotid body tumor.
- Locate the vertebral arteries and establish Antegrade or retrograde flow.
- Label the intracranial vessels including the circle of Willis and communicating arteries.
- Perform a transcranial Doppler to evaluate the middle cerebral artery and direction of blood flow.
- Scan the lower extremity artery and vein to look for any diameter or area reduction.
- Utilize continuous wave Doppler if aliasing appears in the pulsed wave applications of high velocities.
- Perform the direct or indirect method to evaluate the renal arteries.
- Evaluate upper extremity vessels for narrowing, diameter, area reduction and calculate the reduction of disease.
- Demonstrate the Allen test to check for palmar patency.
- Distinguish between primary and secondary Raynaud's.