LINCOLN UNIVERSITY
DI/UT 124 – Peripheral Vascular Doppler
Course Syllabus

Semester: Spring 2013
Instructor: Dr. Ludmila Zakasovskaya, MD, RDMS (AB, BR, OB/GYN), RVT
Credit: 4 units = 3 units of lecture and 1 unit of lab (45 lecture hours + 30 lab hours)
Class Hours: Tuesday 12:30 – 3:15 PM (Lecture), January 22 – May 7
Wednesday 12:30 – 3:15 PM (Lab), February 27 – May 8
Contact: lzakasovskaya@lincolnuca.edu
Office Hours: Tuesday 3:30 – 5 PM

REQUIRED TEXTBOOKS:
1. Introduction to Vascular Ultrasonography. William J. Zwiebel, John S. Pellerto. Fifth Edition; ISBN-13: 978-0-7216-0631-6; ISBN-10: 0-7216-0631-8

SUGGESTED TEXTBOOKS:
2. Peripheral Vascular Sonography: A Practical Guide [Hardcover] Joseph F. Polak (Author); ISBN-10: 0781748712; ISBN-13: 978-0781748711

3. Vascular Technology: An Illustrated Review, Fourth Edition [Paperback] Claudia Rumwell, Michalene McPharlin; ISBN-10: 0941022730; ISBN-13: 978-0941022736

PRE-REQUISITE: DI/UT 114 – Vascular Anatomy & Hemodynamics

COURSE DESCRIPTION:
This course includes introduction to advanced ultrasound technologies including B-mode, Color, Power and Spectral Doppler imaging used for examining peripheral arteries and veins.

LEARNING OBJECTIVES:
Upon satisfactory completion of this course, the student should be able to:

- Describe the anatomy, physiology and normal variations of peripheral arteries and veins
- Differentiate normal from abnormal blood flow patterns
- Apply the diagnostic criteria for carotid artery disease
- Optimize the use of color Doppler and pulsed wave Doppler
- Establish protocols for consistent performance of carotid examinations
- Recognize pitfalls of the carotid ultrasound study
- Diagnose complex and unusual cerebrovascular pathologies

- Link Doppler image information to the manifestations of cerebrovascular disease
- Apply the systematic protocol for physiologic assessment of the lower or upper extremity arterial tree by physiologic testing, using segmental pressures, volume pulse recording, and Doppler waveform analysis.
- Know a routine protocol for performing lower extremity arterial duplex /color and physiologic examination
- Describe standard measurements and diagnostic criteria for duplex/color evaluation of the lover extremity
- Understand normal venous physiology by the evaluation of Doppler imaging
- Recognize the significance of venous pathophysiology by the use of ultrasound imaging
- Compensate for common pitfalls in the diagnosis of venous thrombosis
- Know the different diagnostic criteria for peripheral arterial disease
- Discuss the protocol for assessment of the dialysis access graft

INSTRUCTIONAL METHODS:
Instructional methods will include instructor lecture and in-class hands-on learning activities. Classroom activities are collaborative – students may and should help each other. The instructor will be available to help students with all tutorials and other assignments. The previously described topics will be presented through the aid of the following activities:

- Assigned text readings and lecture outlines (handouts);
- Group discussions and ultrasound case analyses;
- Quizzes & examinations;
- Working with ultrasound machines;
- Hands-on ultrasound laboratory trainings (protocols-handouts);
- Ultrasound laboratory live & video demonstrations;
- Students' Ultrasound Hands-on self-study trainings.

REQUIREMENTS:
- This is a lecture-lab course in which the lecture topics are presented by the Instructor and the ultrasound hands-on lab practice is explained and demonstrated by the Lab Instructor (explaining and demonstrations by lab instructor).
- The student is expected to be prepared in advance before the class sessions.
- Being prepared includes the following: having read text materials (e.g., textbook readings, and lecture outlines) assigned for that day's activities and bringing required work materials (e.g., textbook, handouts, writing supplies, etc.) to the session.
- Homework will include reading the topic (s) one week ahead of time.
- The student is expected to attend and participate in all course lectures and activities, and complete all quizzes, examinations and course assignments on time. **Therefore, attendance and being on time are crucial** to your final grade.
- The student should understand that "introductory" does not mean "easy".

- The student must budget time efficiently and be realistic about all personal and professional commitments that consume time.

❖ **Academic Honesty**

The University maintains a strict policy concerning academic dishonesty, which includes cheating, plagiarism, giving assistance on an examination or paper when expressly forbidden by the instructor, and any other practices which demonstrate a lack of academic integrity. It is the responsibility of the student to know and to adhere to principles of academic honesty. A student found guilty of academic dishonesty will be subject to academic sanctions ranging from failure on the assignment to failure in the course too.

❖ **Ultrasound Hands-on Laboratory Training**

Ultrasound hands-on laboratory will involve primarily students' demonstration of the knowledge presented during lectures. Practical experience will gain under the guidance of a supervisor-teacher. The syllabus set out includes a competency assessment sheet for training. This should be completed the course of training, as it will help to determine in which area(s) the student can practice independently. Students are expected to arrive to class on time, and stay through the end of Ultrasound laboratory class.

ATTENDANCE AND PARTICIPATION:

- Students who are tardy, who arrive after roll is taken or leave before the end of class will receive only half-credit for attendance.
- **Students are not allowed to be late more than 15 min!**
- If you are late or absent, a valid excuse such as illness, family emergency, unforeseen disaster is expected. Oversleeping, and working on films are not considered valid excuses.
- There is no requirement to make up any work missed as a result of an absence. However, it is your responsibility to obtain class notes; you may have missed, from other class members.

IN-CLASS PRESENTATION (PROJECT):

Each student prepares a power-point presentation on ultrasound vascular diagnostic topic of his/her choice. The presentation should be approximately 10 minutes long and 5 minutes discussion. The topics and format for the presentation will be discussed in class. Students will have to submit a topic for their presentation a week before it's due. On the date of the presentation each student will have to submit a printed copy of the presentation and an article that student used to prepare for the presentation. Each student should come prepared to discuss the topics being presented.

Evaluation Criteria for Presentation:

- Clinical statement
- Background information
- Slide content
- Slide design
- Resolution of the problem
- Oral presentation

TESTING:

❖ **Quizzes**

The student will take **11 quizzes, 10-15 questions each**. These quizzes will address the detailed content and major concepts presented in the lectures, lecture outlines, text readings, and study guide activities. Only 10 best quiz scores will be used in calculating the student's total points. Each quiz will be timed, **1 minute for every question to complete**. No make-up quizzes for missed quizzes will be administered.

❖ **Midterm & Final Examination**

- **The student will take written midterm of 50 questions and final examination of 100 questions.**
- The written examinations are proctored and will be closed-book exams.
- Students will not be allowed to refer to texts, notes, nor other materials while taking the exams.
- The Scranton machine will be used in grading multiple-choice tests.
- A student must take the exam during the scheduled time period.
- A student missing an exam because of an illness or legitimate emergency may take a make-up exam as soon as possible after the student returns from the illness and as determined by the instructor. In such a circumstance, the student should make every reasonable attempt to contact the instructor before the exam period is over (or as soon as possible).
- While make-up exams will cover the same content area as a missed exam, the exam format and specific questions may be different.

❖ **Ultrasound Hands-on Laboratory Examination:**

- During final ultrasound hands-on examination, students have to demonstrate understanding of information presented primarily during lectures and hands-on laboratory trainings.
- Students have to perform Vascular protocols and demonstrate scanning technique and images in B-, Color-Modes, and M-mode;
- Students will schedule time and date 2-3 week ahead to Ultrasound hands-on laboratory examination.
- Students need to be at the Ultrasound Lab – ready to start scanning at the exact time you scheduled your exam for. (It is recommended that you arrive about 15 minutes prior to your scheduled exam time.)
- If a student is late for his/her scheduled exam time – Your time CANNOT be changed and you will NOT get a full hour! If student late, he/she will only have the remaining time left in your hour.
- On exam days, you may come to class, but it is not mandatory to be there until your scheduled exam time.
- A student may be allowed to make up the Laboratory examination if there is a valid excuse such as illness, family emergency or natural disaster.

GRADING PLAN:

Evaluation		%
Lecture	Attendance	**10%**
	Quizzes	**10%**
	Presentation	**10%**
	Midterm Exam	**15%**
	Final Exam	**25%**
Laboratory	Attendance	**10%**
	Performance of Scanning	**20%**
Total		**100%**

%	Grades
93-100	A
89-92	A-
85-88	B+
81-84	B
77-80	B-
73-76	C+
69-72	C
65-68	C-
61-64	D+
50-60	D
49≤	F

CLASSROOM PROTOCOL:

- All students are expected to display professionalism, in preparation for hospital work. That means arriving on time, remaining quiet when others are speaking, and paying attention to whoever has the floor in the classroom.
- Students are expected to attend and be prepared for all regularly scheduled classes. If a student knows in advance that he or she will need to leave early, he or she should notify the instructor before the class period begins.
- Students are expected to treat faculty and fellow students with respect. For example, students must not disrupt class by leaving and reentering during class, must not distract class by making noise, and must be attentive to comments being made by the instructor and by peers.
- **Disruptive behavior will not be tolerated**.
- Students engaging in disruptive behavior in class will be asked to leave and may be subject to other penalties if the behavior continues.
- No eating, sleeping or personal grooming is permitted *during lecture and ultrasound laboratory classes.*
- *Drinks only in closed container.*
- Please turn off your cell phones, and refrain from activities that disrupt the class (such as eating and walking in and out of the room while class is in session).
- If you use a computer in class, please use it only to take notes, to access course materials from the course webpage, or to locate information relevant to the class discussion. Do not use your computer to surf the web, check emails, or send/receive text messages, as these activities are distracting to those around you (and decrease your chances of getting the most out of your time in class).

- To encourage the free flow of conversation, no part of any class may be recorded on audio or video media without the permission of the instructor.
- The presence of guests to listen to any part of a class requires the consent of the teacher.

SCHEDULE:

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Weeks #	Lectures #	Topics	Tests #
Week 1	Lecture #1	Hemodynamics Considerations in Peripheral Vascular and Cerebrovascular Disease	Quiz #1
Week 2	Lecture #2	Cerebrovascular Anatomy and Disease	Quiz #2
Week 3	Lecture #3	Carotid Ultrasound 1	
Week 4	Lecture #4	Carotid Ultrasound 2	Quiz #3
Week 5	Lecture #5	Ultrasound Assessment of the Vertebral Arteries	Quiz #4
Week 6	Lecture #6	Ultrasound Assessment of the Intracranial Arteries	Quiz #5
	Lab #1	Carotid & Vertebral Doppler Ultrasound 1	
Week 7	Lecture #7	**Mid-term Exam**	
	Lab #2	Carotid & Vertebral Doppler Ultrasound 2	
Week 8	Lecture #8	Extremity Arterial Anatomy and Collateral Routes	Quiz #6
	Lab #3	Upper Extremity Arterial Vascular Imagining	
Week 9	Lecture #9	Assessment of Lower Extremity Arterial Disease	Quiz #7
	Lab #4	Lower Extremity Peripheral Arterial Imaging	
Week 10	Lecture #10	Assessment of Upper Extremity Arterial Disease	Quiz #8
	Lab #5	Segmental Pressure Measurements	
Week 11	Lecture #11	Extremity Venous Anatomy; Technique for Extremity Venous Ultrasound Examination	Quiz #9
	Lab #6	Upper Extremity Venous Vascular Imagining	
Week 12	Lecture #12	Ultrasound Diagnosis of Venous Thrombosis	Quiz #10
	Lab #7	Lower Extremity Venous Vascular Imagining	
Week 13	Lecture #13	Ultrasound Diagnosis of Venous Insufficiency	Quiz #11
	Lab #8	Hands-on Scan Lab	
Week 14	Lecture #14	**Final Exams**	
	Lab #9		
Week 15	Lecture #15	**Presentations / Review & Make-ups of the Final Exams**	
	Lab #10		

The syllabus updated: January 25, 2013

Note: Instructor may change this syllabus and course schedule at any time according to my judgment as to what is best for the class. Any changes will be declared ahead of time in class.