LINCOLN UNIVERSITY

DI 245 – Echo Scanning (Lab)

Summer 2015 Course Syllabus

Credit:	3 units (90 hours of lab)
Class Hours:	Tue & Thur 3:30 – 6:15 PM
	Mon & Wed 6:30 – 9:15 PM
Instructor:	Dr. Seyed A. Sadatian, RDMS (Abdomen), RVT, RDCS
Contact:	sasadatian@yahoo.com or ssadatian@lincolnuca.edu
Cell:	818-469-4438
Office Hours:	Fridays 1:00 – 2:30 PM or by appointment

REQUIRED TEXTBOOK:
Echocardiographer's Pocket Reference, 4th edition, 2013, Terry Reynolds
ISBN-13: **978-0615768359**; ISBN-10: **0615768350**

The Normal Examination and Echocardiographic Measurements, 2nd revised edition, Bonita Anderson, 2007, ISBN-13: **978-0646468631**; ISBN-10: **0646468634**

Echocardiography Pocket Guide: The Transthoracic Examination, 1st Edition. Bernard E. Bulwer, Jose M. Rivero, 2010, ISBN-13: **978-0763779351** (pbk.); ISBN-10: **0763779350** (pbk.)

Additional recommended textbooks and instructional materials will be given during classes.

Prerequisite: DI 235

Course Description
Scanning protocols and practices for the ultrasound examination of the heart. (3 units)
Prerequisite: DI 235

Learning Objectives
Upon satisfactory completion of this course, the students will be able to:

- Assist patients to and from the exam area
- Explain the examination and instruct the patient properly
- Describe a scanning survey and explain its importance prior to taking images
- Explain the selection of the proper transducer for the exam
- Explain the elements of film labeling
- Describe optimal techniques related to field size, power, gain, and contrast for image interpretation
- Present films in a logical sequence
- Describe the anatomy, physiology, normal variations, and pathology of myocardium, pericardium and valves.
- Explain the significance of clinical tests relevant to pathology within heart.
- Explain the sonographic findings and differential diagnosis of findings.

Ultrasound Hands-on Laboratory Training

Ultrasound hands-on laboratory training will involve:

- Using the theoretical material presented as a basis for hands-on training
- Applying theoretical knowledge to practice
- Learning to follow proper ultrasound scanning protocols
- Acquiring optimal quality of diagnostic images
- Proper operation of ultrasound machines and maximizing the machines' capabilities
- Gaining practical experience under the guidance of the lab instructor

Instructional Methods

- In-class hands-on scanning, using ultrasound machines and other lab equipment
- Live demonstration ultrasound imaging of organs and blood vessels
- The instructor's guidance to develop students' scanning skills
- Group work, discussions and ultrasound case analysis
- Ultrasound laboratory video demonstrations and presentations

Homework

The goal of the homework is to help students achieve the course learning objectives. Homework consists of reading the textbook and materials to review and analyze the previous lab session. Students are expected to spend six hours for each lab session outside of lab in completing the reading assignments related to each lab session. These assignments are graded through short quizzes given at the beginning of the following class session.

Also, students are required to complete 20 hours in **lab self-study** (with 6 independently performed studies, which would represent date and student's name on each ultrasound image).

Quizzes

Students will take 10 quizzes; 10-20 questions each. These quizzes will address the detailed content and major concepts presented in the lab session, course materials and text readings to evaluate students' work outside of the lab. Each quiz will be timed; 1 minute for every question to complete. No make-up quizzes for missed quizzes will be administered (students will receive no score for missed quizzes).

Ultrasound Hands-on Laboratory Examination

During the Hands-On Lab Examination, students should demonstrate:

1. The understanding of the information presented primarily during the hands-on laboratory training.
2. The knowledge of the anatomy, physiology, normal variations, and pathology of the human body.
3. In-depth knowledge of the ultrasound scanning protocols and the ability to present images in a logical sequence.
4. The use of different acoustic windows to achieve the best picture quality possible.
5. The ability to select the proper transducer for the exam.

6. The knowledge of the ultrasound machine capabilities for the optimal quality of diagnostic images (frequency, TGC, B-mode, focal zones, color scale, gain, depth, etc.).
7. The ability to describe optimal techniques related to field size, power, gain, and contrast for the image interpretation.
8. Knowledge of the elements of the image labeling.
9. Explanation of the sonographic findings and differential diagnosis of abdominal pathology.
10. Since the intent of the lab examination is for the students to demonstrate the knowledge of the scanning protocol, students are not allowed to ask questions and discuss the scanning procedures with classmates. Reference materials are not allowed.

Midterm / Final Exam Grading System

- Midterm and Final Exams will be performed on scheduled days in the presence of the lab instructor.
- The length of the examination will depend on the type of the ultrasound protocol.
- The score (%) will be determined by acquiring the ratio of the correct / incorrect images recorded by the student.
- Depending on the quantity of the required images of the particular protocol, each image will be valued at certain amount of points.
- The points for missed (or completely incorrect) ultrasound images will be subtracted from the total 100% score.
- The added score of the correct ultrasound images (according to the protocol requirements) will represent the total examination grade.

Testing

Ultrasound Hands-on Laboratory Examination:

- During the final ultrasound hands-on examination, students will have to demonstrate understanding of information presented during the hands-on laboratory training.
- Students have to perform different ultrasound protocols and demonstrate scanning technique and images in B-mode, M-mode, Color and Spectral Doppler.
- Students are required to schedule time and date 1-2 week ahead for ultrasound hands-on laboratory examination.
- Students need to be at the ultrasound lab, ready to start scanning at the exact scheduled time.
- If a student is late for the scheduled exam time, the time **CANNOT** be changed and the student **WILL NOT** get a full hour! The student will only have the remaining time left in the hour.
- Only one time **RETESTS** will be given to students with a valid excuse such as illness, family emergency, unforeseen heavy traffic or natural disaster.

Grading

Evaluation	Weighting
Attendance	**20%**
Quizzes	**10%**
Self-study Lab	**10%**
Midterm Exam	**30%**
Final Exam	**30%**
Total	**100%**

%	Grades
100-94	A
93-90	A-
89-87	B+
86-84	B
83-81	B-
80-78	C+
77-76	C
75-74	C-
73-72	D+
71-70	D
69<	F

Schedule: DI 245
Summer 2015

Week	Date	Topics	Quiz
1	06/08/15	General approach to Echo, PLAX	
1		PLAX & PSAX 2D & color	
1		Parasternal window measurement (m-mode)	1
1		Parasternal window measurement (2D) & PSAX Duplex	
2		Apical window 2D (A4C, A5C, A2C,A3C)	2
2		Apical window 2D Duplex	
2		Apical window 2D, Duplex	3
2		Parasternal & Apical windows 2D	
3		Parasternal & Apical windows 2D & M-mode	4
3		Parasternal & Apical windows 2D, M-mode, Duplex	
3		Parasternal & Apical windows 2D, M-mode, Duplex	5
3		Parasternal & Apical windows 2D, M-mode, Duplex	
4	07/02/15	MIDTERM EXAM	
4		Subcostal window- long axis 2D & Color	
4		Subcostal window-short axis 2D & Color	6
4		Suprasternal notch window-short & long axis	
5		Suprasternal notch window-short & long axis 2D, Duplex	7
5		Review common MV pathology	
5		Full Protocol 2D, M-Mode, Duplex	
5		Review common AV pathology	8

6		**Full Protocol 2D, M-Mode, Duplex**	
6		**Review common myocardial pathology**	**9**
6		**Full Protocol 2D, M-Mode, Duplex**	
6		**Review Diastolic dysfunction**	**10**
7		**Full Protocol 2D, M-Mode, Duplex**	
7		**Full Protocol 2D, M-Mode, Duplex**	
7		**Full Protocol 2D, M-Mode, Duplex**	
7	**07/23/15**	**FINAL EXAM**	

Makeup Exam: 07/27/2015

Syllabus updated: June 8, 2015

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