



# LINCOLN UNIVERSITY

## DI 125 – Introduction to Echocardiography Summer 2015 Course Syllabus

- Credit:** 4 units = 3-unit lecture and 1-unit lab  
(75 total contact hours = 45 lecture hours + 30 lab hours)
- Class Hours:** Monday 9:00-11:45 AM and Friday 3:00-6:15 PM (Lecture),  
Monday 3:30-6:15 PM and Wednesday 3:30-6:15 PM (Lab)
- Instructor:** Dr. Seyed A. Sadatian, RDMS (Abdomen), RVT, RDCS
- Contact:** [sasadatian@yahoo.com](mailto:sasadatian@yahoo.com) or [ssadatian@lincolnuca.edu](mailto:ssadatian@lincolnuca.edu)  
818-468-4438
- Office Hours:** Fridays 1:30 – 3:00 PM or by appointment
- Lab. Instructor:** Seyed A. Sadatian

### REQUIRED TEXTBOOK:

- 1) The Transthoracic Examination: 1<sup>st</sup> Edition, Bernard E. Bulwer, Jose M. Rivero, 2011  
ISBN-13: 978-0-7637-7935-1; ISBN-10: 0-7637-7935-0
- 2) Echocardiographer's Pocket Reference, 4th edition, 2013, Terry Reynolds  
ISBN-13: 978-0615768359; ISBN-10: 0615768350
- 3) The Normal Examination and Echocardiographic Measurements, 2nd revised edition, Bonita Anderson, 2007, ISBN-13: 978-0646468631; ISBN-10: 0646468634

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

### PREREQUISITE: DI 110

### COURSE DESCRIPTION:

The course studies harmonic imaging and 2-dimensional Doppler color imaging, which are used for ultrasound evaluations and sonographic appearances of heart's myocardium, valves, epicardium and, great vessels. (4 units).

### 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 the myocardium, valves, epicardium and, great vessels and identify their normal and abnormal sonographic structural appearance
- Demonstrate knowledge of cardiac and thoracic pathological findings
- Explain the significance of clinical tests relevant to pathology within the heart
- Explain the sonographic findings and differential diagnosis of cardiac pathology

### **INSTRUCTIONAL METHODS:**

Instructional methods include lectures and in-class hands-on scanning. 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 following activities:

- Assigned text reading;
- Lecture materials;
- Recommended study guide activities;
- Internet resources;
- Group discussions and ultrasound case analysis;
- Quizzes & examinations;
- Practice using ultrasound machines;
- Hands-on ultrasound laboratory protocols;
- Ultrasound laboratory live & video demonstrations;
- Students' Ultrasound Hands-on self-study.

### **REQUIREMENTS:**

- This is a lecture-lab course in which lecture topics are presented by the lecturer and the ultrasound hands-on lab practice is explained and demonstrated by the lab instructor.
- Students are expected to be prepared in advance of the class sessions.
- Preparation includes the following: having read text materials (e.g., textbook readings, and lecture outlines) assigned for each class session and bringing required work materials (e.g., textbook, handouts, writing supplies, etc.) to the session.
- Homework includes reading topic prior to the class.
- Students are expected to attend and participate in all lectures and activities, and complete all quizzes, examinations and course assignments on time. Therefore attendance and being on time are crucial for final grade. Students 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 students 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 assignment failure to course failure.

### **ULTRASOUND HANDS-ON LABORATORY TRAINING:**

Ultrasound hands-on laboratory training is primarily focused on providing students with the physical execution of the information presented during the lectures. Practical experience will be gained under the guidance of the laboratory instructor. Students are expected to arrive at the class on time, and stay through the end of the ultrasound laboratory class.

## **COURSE GUIDELINES:**

To successfully complete this course, students must pass the quizzes, project, midterm and final exam portions with a 70% or better. Students should attend all the class meetings (lectures and labs). However, considering possible urgent situations, students may be absent from maximum four class meetings with prior notice to the instructor. Three late arrivals will affect the grade.

The term grade is based on attendance, class activity, projects, midterm and/or sum of quizzes, final examination, and lab. Individual projects will be assigned at the beginning of the semester. Project is due by the last meeting before the final examination. No project will be accepted after the due date. If a student misses a class without a valid reason, no make-up for quizzes and presentations is allowed. With a valid document, a student is allowed to take missed tests within one week. There is no make-up for missed or failed midterm. The final examination, if failed, can be retaken only once, on 05/18/2015. Dictionaries can be used during the class time. No electronic devices during the test time.

Exams must be taken 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.

During the written exam, any student observed in a situation that could be considered suspicious (e.g., an open book within his/her field of vision, looking around or checking a cell phone or other wireless device, etc.) but no cheating is observed, will be warned. Once warned, any applicant found cheating on written exam will be failed for the exam and prohibited from retaking the written exam without permission from the dean.

Students cannot leave the room during the test/exam. As soon as a student leaves, his/her exam is considered finished.

Lecture is not a substitute for textbooks. Students should read textbooks and use other sources to be prepared for the tests. Lecture is to guide the students to prepare for the course subjects.

## **HOMEWORK:**

The goal of the homework is to help students achieve the course learning objectives. Homework consists of two parts. First part is to read the textbooks and materials to review and analyze the lecture given during a previous class session. Students are expected to spend six hours for each class session outside of class in completing the reading assignments related to each lecture. These assignments are graded through short quizzes given at the beginning of the following class session. Second part of the homework consists of a project presented at the end of the course. Each student will choose the topic for presentation or will be assigned one by the instructor. The presentation should be approximately 10 minutes long and with 5 minutes for a discussion. The presentation should include ultrasound images related to the topic of presentation. The images need to be dated and should indicate the student's name. The topic and format for the presentation will be discussed in class for more details. A final draft of the presentation must be submitted for review one week prior to the presentation.

### **Evaluation Criteria for Project:**

- Clinical statement: 2%
- Background information: 2%
- Slide content: 2%
- Slide design: 1%
- Resolution of the problem: 2%

- Oral presentation in class: 1%
- Total: 10% of all the course grading elements

## TESTING:

### Quizzes:

Students will take 10 quizzes; 15-25 questions each. These quizzes will address the detailed content and major concepts presented in the lectures, lecture outlines and text readings to evaluate students' work outside of the classroom. If a student takes more than ten quizzes, only the best ten 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 (students will receive no score for missed quizzes).

### Ultrasound Hands-on Laboratory Examination:

- During the final ultrasound hands-on examination, students will have to demonstrate understanding of information presented during lectures and 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 2-3 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. (It is recommended that students arrive about 15 minutes prior to the scheduled exam 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.

## Lab Grading:

### \*Scanning Performance: 25%

Effective use of lab time, demonstrating development of scanning skills, applying scan techniques, effective use of ultrasound machine controls, IE: TGC, Depth PRF, Freq. Transducers, and improving images on each patient. Complete/full participation and working during class time is expected. Students are encouraged to use open lab time as needed. 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).

### \*Attendance: 5%

Absences, late arrival, poor use of class times, early leaves will result in students' poor or failing grade.

**GRADING:**

Evaluation	Weighting
<b>Lecture</b>	
Attendance	10%
Quizzes	10%
Project	10%
Midterm Exam	20%
Final Exam	20%
<b>laboratory</b>	
Attendance	5%
Scanning Performance	25%
<b>Total</b>	<b>100%</b>

%	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

**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.
- Never speak while the instructor is speaking.
- 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.

- 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. You may record notes by hand or by typing into a mobile computer.
- The presence of guests to listen to any part of a class requires the consent of the instructor.
- Read the section that is to be covered in class BEFORE the lecture to better understand examples being worked in class.
- Take a look at the assigned homework problems before attending class.
- Read the section one more time after class and then try the homework problems.

**Lecture Schedule:** Monday 9:00-11:45 AM and Friday 3:00-6:15 PM

Weeks	Lecture #	Date	Topics	Quiz
1	1	06/09/15	Introduction to Ultrasound, Cardiac Anatomy at a Glance – PLAX view	
1	2		Cardiac Physiology at a Glance & PSAX	1
2	3		M-Mode, Color Doppler, Optimizing Image & Artifacts in Echo	2
2	4		Cardiac Valvular Diseases	3
3	5		Apical, Subcostal & Suprasternal Notch Views & Duplex	4
3			Case study & Exam Review	5
4		06/29/15	<b>MIDTERM EXAM</b>	
5	6		Cardiomyopathy	
5	7		Cardiac Congenital Diseases in Adult	6
6	8		Endocardium & Pericardium Diseases	7
6	9		Cardiac Tumors	8
7			Case Study & Review for Final Exam Student Presentations of Projects	
7		07/24/15	<b>FINAL EXAM</b>	

**Makeup Exam: 07/27/2015**

**Lab Schedule:** Monday and Wednesday 3:30 – 6:15 PM

Weeks	Dates	Topics
1	06-Jun	Parasternal Window - Long Axis View
2		Parasternal Window - Short Axis
3		M-Mode, Color Doppler, Optimizing Image
4	29-Jun	Midterm Exam
5		Apical Window (A4C, A2C, A3C)
6		Subcostal & Suprasternal Windows & Duplex
7	24-Jul	Final Exam

Updated: June 13, 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.