Lincoln University

Fall 2010 Course Syllabus

Course Code: DI 175 / UT 175

Course Title: Advanced Echo Imaging

Professor: Olga Davidovich, MD, RDCS, RVT, RDMS

Credit Hours: 45 hours of lecture (3 units)/ 30 house of Lab (1 unit)

Pre-requisites: DI 135 / UT 135

Course Description:

A continuation of review of imaging methods and technology based on 2-dimensional echo, M-Mode, and Doppler sonographic imaging. Applications to recording and interpretation of echo imaging for detection of heart abnormalities are emphasized.

Course Objective and Student Learning Outcomes:

Upon satisfactory completion of this course, the student will be able to:

- Utilize echocardiography, identify and describe the anatomical structures of the heart and great vessels.
- Describe the physiological function of four chambers of the heart, valves, supporting structures and the great vessels.
- List normal intercardiac pressures and oxygen saturation values for the chambers of the heart and great vessels.
- Recognize normal and abnormal hemodynamic pressure curves from the atria, ventricles and great vessels.
- Record factors of patient medical history as related to non-invasive diagnostic testing.
- Conduct a limited physical examination of the patient to recognize certain cardiovascular disorders.
- Properly utilize a stethoscope in recognition/ evaluation of normal heart sounds. Relate the heart sounds to hemodynamic events occurring within the cardiovascular system.
- Recognize systolic and diastolic murmurs and relate these murmurs to specific pathological conditions of the heart.
- Utilize the echocardiograms to measure valve leaflet excursion/ velocity, wall thickness and chamber dimensions.
- Utilize the echocardiogram to recognize various basic pathological conditions. Such as: mitral stenosis, mitral valve prolapse, pericardial effusion, aortic stenosis, etc.
- Recognize the cardiac and great vessels structures in various (hybrid) views 2-D echo views.

- Preparation and protocol for stress echo.
- Use Tissue Doppler for evaluation of diastolic dysfunction.
- A proper way to measure ejection fraction, atrial volume and evaluation of diastolic function.
- How to correctly evaluate aortic stenosis from different views with 2-D probe and pedoff probe.
- Alternate views to evaluate heart and valve function in technically difficult studies.
- Recognize the cardiac and great vessels structures in the M-mode 2-D echocardiography.

Instructional Methods:

Instructional methods well include but are not limited to lectures by the instructor and in-class hands-on learning activities. Classroom activities are collaborative- students may and should help each other. This instructor will be available to help students with all tutorials and other assignments. Students will be held responsible for keeping up with the reading assignments.

45 hours of lecture= 3 units

30 hours of lab= 1 unit

Evaluation:

1. Homework and quizzes- written homework assignments will be given periodically. Additionally, unannounced quizzes will be given during class time.
2. Final examinable.
3. Grading scale:

Class Participation	20%
Quizzes	20%
Lab	20%
Homework	10%
Final exam	30%
Total of	100%

90 – 100: A

80 – 89: B

70 – 79: C

60 – 69: D

Below 60: F

Resource Materials:

- The Echo Manual
  By: Jae K. Oh, J.B. Seward, A. Jamil Tajik
- The Echocardiography's Pocket Reference third edition
  By: Terry Reynolds BS, RDCS
- Echocardiography Review Guide
  By: Catherina M. Otto and Rebecca G. Schwaegler

DI 175 – Advanced Echo Imaging

Course Outline:

Week 1: Review of heart disease.

Week 2: Review of full protocol, Doppler and color flow Doppler.

Week 3: How to improve the quality of technically difficult study (TDS.)

Week 4: How to conduct a limited physical examination of the patient for cardiovascular disorders.

Week 5: How to report a preliminary report for the cardiologist.

Week 6: Proper scanning of the heart with different arrhythmias and Midterm review.

Week 7: Midterm.

Week 8: Evaluation for Diastolic dysfunction.

Week 9: Stress echo patient setup and protocol.

Week 10: Tee views and protocol.

Week 11: Patient care, safe scanning and infection control.

Week 12: Case Study.

Week 13: Case Study.

Week 14: Review for Final.

Week 15: Final.

(Revised: 8/1/2011)