LINCOLN UNIVERSITY

DI 185 / UT 185
ADVANCED ECHO IMAGING (LAB)
Spring 2011 Course Syllabus

Lecture Schedule:	Monday & Wednesday, 6:30 – 10:15 PM
Credit:	4 units
Instructor:	Dr. Elena Pershay
Contact:	rubelena@yahoo.com
Textbook:	The Echocardiographer's Pocket Reference by Reynolds **ISBN-10:** 0963576798, **ISBN-13:** 978-0963576798 The Echo Manual by Jae K. Oh, J. B. Seward, A. Jamil Tajik **ISBN-10:** 0781748534, **ISBN-13:** 978-0781748537

COURSE DESCRIPTION
Students will learn advanced echocardiographic procedures. Topics include stress echo, related diagnostic imaging, and related noninvasive cardiac testing. (4 units)

Review of the standard echo-protocol including 2D measurement, M-Mode and Doppler study for detection of heart abnormalities including valve diseases, pericardial and pleural effusions, cardiomyopathies, cardiac masses and tumors. Review congenital heart diseases in adult. Assessment of the systolic and diastolic functions of the heart. Interpretation of wall motion abnormalities in stress echocardiogram. Estimate of mitral and aortic valve areas, severity of valve's regurgitation (insufficiency). Estimate left ventricular mass, left atrial volume and volume index. Stress echocardiology.

PREREQUISITE: DI 145 / UT 145 – Echo Scanning (Lab)

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

- Demonstrate the ability to perform and to interpret standard echo-protocol
- Demonstrate the ability to perform the preliminary report
- Recognize heart pathology including valvular disorders such as mitral stenosis, mitral prolapse, mitral annulus calcification
- Review formulas to calculate mitral valve area
- Recognize aortic stenosis on echocardiogram, determination of the level of

aortic stenosis using special formulas

- Utilize the echocardiograms to determine the grade of valvular insufficiency (aortic, mitral, pulmonic and tricuspid)
- Utilize formulas to determine the severity of regurgitation
- Utilize PISA method in the evaluation of the mitral insufficiency
- Demonstrate knowledge in determination of pericardial and pleural disease
- Utilize echo protocol to assess congenital heart diseases in adults
- Estimate level of the pulmonary hypertension
- Determine the left ventricular mass in case of LVCH
- Utilize formulas to determine left atrial volume, and left atrial volume index
- Determine ventricular function, wall motion abnormalities
- Demonstrate knowledge to interpret stress echocardiogram
- Estimate the severity of LVOT obstruction
- Estimate left ventricular diastolic function
- Color M-Mode in diagnostics of left ventricular diastolic function

METHODOLOGY

Instructional methods will include instructor lecture, hand-outs, in-class hands-on learning activities, and video presentations according to subjects. 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.

CODE OF CONDUCT

- Students are supposed to attend all classes (2 absences are acceptable due to a significant reason or a disease).
- No use of cellular phone.
- No distractive/harassing activities.
- Discussions and debates are acceptable due to the subject.

EXAMINATION POLICY

1. Midterm Examination
2. Final Examination
3. Students will be given some quizzes periodically according to the subject of studying. (Notes are not allowed. Dictionaries are OK.)
4. Final Project

GRADING

Attendance	Every week	10%
Homework	Every week	10%
Mid-term exam	Ninth week	30%
Project	Fourteenth week	10%
Final exam	Sixteenth week	40%

91% - 100%	A	66% - 70%	C+
86% - 90%	A-	61% - 65%	C
81% - 85%	B+	56% - 60%	C-
76% - 80%	B	46% - 50%	D
71% - 75%	B-	0% - 45%	F

To successfully complete this course, the student must pass quizzes, mid and final exam portions with a combined grade of 70% or better.

COURSE SCHEDULE

- Assessment of the left ventricular diastolic function
  - Ability to utilize appropriate views and techniques to obtain the necessary information to diagnose diastolic function of the left ventricle
  - Ability to diagnose different stages of diastolic dysfunction and being able to distinguish them

- Assessment of the left ventricular systolic function
  - Utilization of Simpson's rule, fractional shortening to calculate ejection fraction of the left ventricle
  - Repetition of the formulas representing cardiac function

- Applications for stress echocardiogram
  - Learning the routine procedures associated with stress echo

- Assessment of ischemic heart diseases and relating its knowledge to the stress echo

- Applications of various cardiac imaging and Doppler techniques to assess valvular heart diseases, including mitral valve, aortic valve, tricuspid valve and pulmonic valve
  - Implementing the various measuring techniques used to assess valvular heart diseases

- Application of proper techniques for the identification of endocarditis

- Application of the proper imaging and Doppler techniques to evaluate prosthetic heart valves

- Utilization of the appropriate echo images to differentiate pericardial and pleural effusion
  - Quantitative measurements of applicable disease
  - Identification of the various types of pericardial disease

- Implement of the echo images due to echo protocol to diagnose and to evaluate various types of cardiomyopathies
  - Assessment of the hemodynamic effects caused by different types of cardiomyopathies

- Review of various types of the congenital heart diseases found in adults
  - Application of the echocardiographic methods to evaluate cardiac shunts, valvular stenosis and related regurgitant lesions
  - Relating knowledge of normal cardiac hemodynamics to the abnormal effects of the various congenital heart diseases

- Discussion of the etiologies for systemic and pulmonary hypertensive heart disease
  - Application of the quantitative methods to determine systemic and pulmonary hypertensive heart diseases
  - Utilization of the echocardiographic images, M-Mode and Doppler procedures to evaluate systemic and pulmonary hypertensive heart diseases

Last Update: March 23, 2011