COURSE SYLLABUS

Course Number: **DI 145 / UT 145**

Course Title: **Echo Scanning (Lab)**

Course Credit: **4 units**

Pre-Requisite: **DI 135**

COURSE DESCRIPTION

You will learn scanning protocols for the ultrasound examination of the heart.

COURSE OBJECTIVES AND STUDENT LEARNING OUTCOMES

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

- Perform examinations in the area of heart.
- Select the proper transducer for the examination to be performed.
- Utilize correct anatomical landmarks and scanning references when performing and labeling a study.
- Demonstrate the area of interest by utilizing correct scanning planes and paths.
- Adjust gain controls for optimum display.
- Demonstrate professionalism and ethical behavior in the clinical setting.
- Identify pathological conditions commonly demonstrated on this type of procedure.

INSTRUCTIONAL METHODS

Instructional methods will include 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.

120 hours lab = 4 units

EVALUATION

Lab-work classes will be supervised and evaluated by the instructor.

Grading Scale:

Class Participation	30%
Lab	40%
Final Practice Exam	30%
	100%

90 – 100	A
80 – 89	B
70 – 79	C
60 – 69	D
Below 60	F

To successfully complete this course, the student must pass the lab and final practice exam portions with a 70% or better.

RESOURCE MATERIALS

Ultrasound Scanning: Principles & Protocols
by Betty Bates Tempkin

REQUIREMENTS

- **"ECHO PROTOCOL" –** established sequence of images taken, eliminating occurrence of accidents of forgetting to take certain images. Students are expected to know echo protocol for the final examination.

- Everybody is expected to know the **range of normal dimensions** of heart structures and blood flow velocities (additional hand-outs will be distributed).

TOPICS

- Left Ventricular Diseases: LV Hypertrophy, Dilated Hypertrophy, LVOT Obstruction
- Valvular Pathology:
  - Mitral Valve (Mitral Regurgitation and Mitral Stenosis (MS) in particular)
  - Aortic Valve (Aortic Stenosis (AS) in particular)
  - Pulmonic Valve
  - Tricuspid Valve
- RVSP = Right Ventricular Systolic Pressure = TR Peak.
  Pulmonary Pressure = RVSP + IVC Gradients (5-20mmHg)
- 2D Color Options
- Post-processing
- Continuous and Pulse-wave Doppler, Color Doppler
- Diseases of Aorta
- Subcostal Imaging
- Pericardial Effusion

PROTOCOL

1. Increased-depth PLAX
2. PLAX
3. Measure diastolic/systolic LV wall thickness
4. Zoom in on AV valve
5. Measure LVOT diameter
6. M-mode of AV/LA with measurements
7. Zoom in on MV
8. M-mode of MV and EPSS
9. Color on LVOT, AV and MV
10. "Tajik" view of TV
11. Color on TV
12. Measure TR

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13. PSAX
14. Zoom in on AV (Mercedes-Benz sign)
15. Color on PV
16. Show and measure PI if any

17. Color on AV, look for ASD
18. Color on TV
19. Measure TR
20. MV view (fish-mouth)
21. LV view (donut)

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22. Increased-depth of Apical 4-chamber view
23. Show normal view of 4-chamber image
24. Measure LA area and length
25. Measure RA area and length
26. Zoom in on LV
27. Measure LV diastolic volume
28. Measure LV systolic volume
29. Show 2-chamber view
30. Measure LA area in 2-chamber view
31. Zoom in on LV 2-chamber view
32. Measure LV diastolic volume in 2-chamber view
33. Measure LV systolic volume in 2-chamber view
34. Show Apical Long
35. Zoom in if needed on Apical Long LV
36. Put color on Apical Long to show AI and MR in particular
37. Rotate to 2-chamber and put color on
38. Rotate to 4-chamber and put color on
39. Open LVOT and put color on
40. Go back to 4-chamber and put color on TV
41. Measure TR
42. Put PW on MV leaflets
43. Measure E/A waves, E-ware descending slope, and LVRT
44. Tissue Doppler
45. Measure MR (CW through MV)
46. Do PISA if needed (advanced echo technique)
47. Measure LA Venous return (advanced echo technique)
48. Put PW in LVOT and trace
49. Put CW through AV and trace
50. Zoom in on Atrial Septum and put color to rule-out ASD

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51. Increased-depth Subcostal View
52. Regular Subcostal View, trying to show as much LV and RV as possible to r/o Pericardial Effusion
53. Show IVC collapse with inspiration
54. Zoom in on ASD with color
55. Show Descending Aorta

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56. Show arch of the aorta
57. Put color on
58. Put CW on Descending Aorta