

Echocardiographic Evaluation of Pathology I (DSAE 2404)



Credit: 4 semester credit hours (3 hours lecture, 4 hours lab)

Prerequisite/Co-requisite: Passed all previous sonography courses.

Course Description

Adult acquired cardiac pathologies. Topics include cardiovascular pathophysiology, quantitative measurements, and the application of 2-D, M-Mode, and Doppler. Recognition of the sonographic appearances of cardiovascular disease is stressed.

Required Textbook and Materials

1. The Notebook 6.5 edition, by Susan King DeWitt, BS, RDCS, RCS
<http://echocardiographer.tripod.com> as well as the workbook that corresponds with this textbook.

Course Objectives

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

1. Describe the etiology, signs and symptoms, treatment and echocardiographic features of common valvular and myocardial diseases.
2. Discuss the criteria for recognition, evaluation and quantification of these diseases.
3. Identify pathophysiology and hemodynamic consequences.

Course Outline

- A. LIT
 - a. Policies
 - b. Academic calendar
 - c. Classroom policies
- B. Schedules
 - a. Lab schedule
 - b. Clinical schedule
 - c. Review previous semester cardiac anatomy and physiology.
 - d. Advanced cardiac anatomy and Physiology
 - e. Cardiac cycle
 - f. Cardiac Hemodynamics
 - g. Cardiac Doppler
 - h. Doppler equation
 - i. Doppler Quantification

- C. Cardiac Physiology
 - a. Effects of abnormal pressures and loading
 - i. Volume concepts
 - ii. Afterload
 - iii. Preload
 - iv. Frank Starling's Law
- D. Physiological response of cardiac chambers to the following:
 - a. Increased volume
 - i. Preload (varying preload conditions)
 - ii. Frank Starling Law
 - b. Increased pressure
 - i. Afterload (varying afterload conditions)
 - ii. Hypertrophy
 - c. Pulmonary vascular disease
- E. Normal and Abnormal hemodynamics and flow patterns.
 - a. Miscellaneous measurements specific to patient history.
- F. Ventricular systolic function/dysfunction
 - a. Ejection Fraction
 - b. Simpson's method
 - c. Recognition/ Evaluation/ Quantification of normal/abnormal measurements
- G. Ventricular diastolic function/dysfunction
 - a. Chamber size
 - b. E to A ratio
 - c. PISA
 - d. Pulmonary veins
 - e. Tissue Doppler
 - f. Recognition/ Evaluation/ Quantification of normal/abnormal measurements
- H. Stress Echo
- I. Heart failure
 - a. Etiology/ Signs/ Symptoms/ Recognition/ Evaluation/ Quantification of normal/abnormal measurements by echocardiographic features
- J. Ischemic Heart Disease
 - a. Etiology/ Signs/ Symptoms/ Recognition/ Evaluation/ Quantification of normal/abnormal measurements by echocardiographic features
- K. Myocarditis
 - a. Etiology/ Signs/ Symptoms/ Recognition/ Evaluation/ Quantification of normal/abnormal measurements by echocardiographic features
- L. Embryology
- M. Hypertensive heart
 - a. Etiology/ Signs/ Symptoms/ Recognition/ Evaluation/ Quantification of normal/abnormal measurements by echocardiographic features

Grade Scale

| | |
|-------------|--|
| 93 – 100 | A |
| 85 – 92 | B |
| 75 – 84 | C |
| 68 - 74 | D (not able to continue in sonography program) |
| 68 or below | F |

Course Evaluation

Semester grades will be calculated from the following criteria:

1. Unit tests/Final 59%
(Unit tests worth 39%/ Final Exam 20%)
2. Research/Power Point Project 10%
3. Homework 5%
4. Lab Participation 26%
(25% lab grade will be scan tests/25% will be lab participation/50% will be Final Semester Scan)

Course Requirements

1. Unit tests
2. Reading assignments
3. Worksheets/Homework
4. Community Service
5. Lab Tests
6. Class Presentation
7. Final Exam

Course Policies

1. No food, drinks, or use of tobacco products in class.
2. Beepers, cell phones, head phones and any other electronic devices must be turned off while in class.
3. Do not bring children to class.
4. If a unit test is missed, arrangements will be made with the instructor to take the test in a timely manner.
5. All exams will be on the dates specified unless the instructor makes a change. In case of an absence on exam day, the exam must be completed on the day the student returns to class or a grade of zero will be awarded.

6. Attendance Policy: Students are expected to be in class unless prior arrangements have been made. Absences must be limited to serious illness and/or immediate family emergencies. Unexcused absences are not allowed. **Three (3) lecture absences will result in a letter grade reduction. Two (2) lab absences will result in a 10 point grade reduction from the overall lab average. Excessive tardiness (more than 10 minutes/class or more than 2 consecutive classes) will result in an absence being awarded.** In the event that LIT is forced to cancel classes due to inclement weather, DMS classes and clinical rotation will also be canceled. Notification of closures will be made through local radio and TV stations. Students out of the immediate broadcast area should contact the Program Director for information. **It is extremely important that students communicate with the faculty regarding absences by telephone and/or email at all times.**
7. **Lab Practical Final Exam grade must have a passing grade of 77 or higher to continue in the program. If not, you may have two additional attempts to pass the Lab Practical Final Exam with a 77 or higher. If this is not achieved, you will be given 0% for your OVERALL LAB GRADE resulting in failing the course and the inability to continue in the sonography program.**
8. All assignments are due when stated. Late assignments will result in a drop of **10** points per late day, and more than five days past due will result in a grade of **0**. If a student has an excused absence with written documentation, assignments will be accepted at the beginning of class upon return. Missed in-class assignments receive a grade of **0**.
9. Whenever testing occurs, all books/ backpacks must be placed in the front of the classroom away from the entire class. Cellphones and any other electronic devices are to be placed in a basket in the front of the room and will be returned when the test is turned in.
10. It shall be considered a breach of academic integrity (cheating) to use or possess on your body any of the following devices during any examination unless it is required for that examination and approved by the instructor: Cell phone, smart watch/watch phone, laptop, tablet, electronic communication devices (including optical), and earphones connected to or used as electronic communication devices.
 - a. **Cheating on any (lecture/lab) exam results in immediate dismissal from the program and an F for the course.**
11. You will have the length of the class to finish an exam. **No extra time** will be given.
12. If you wish to drop a course, the student is responsible for initiating and completing the drop process. If you stop coming to class and fail to drop the course, you will earn an “**F**” in the course.

13. There will be no extra credit assignments given in this course.
14. Students with special needs and/or medical emergencies or situations should communicate with their instructor regarding individual exceptions/provisions. It is the student's responsibility to communicate such needs to the instructor.
15. Four hours of community service will be **REQUIRED** this semester in this course.
16. Additional class policies as defined by the individual course instructor and sonography handbook.

Technical Requirements (for courses using Blackboard)

The latest technical requirements, including hardware, compatible browsers, operating systems, software, Java, etc. can be found online at:

https://help.blackboard.com/en-us/Learn/9.1_2014_04/Student/015_Browser_Support/015_Browser_Support_Policy

A functional broadband internet connection, such as DSL, cable, or WiFi is necessary to maximize the use of the online technology and resources.

Disabilities Statement

The Americans with Disabilities Act of 1992 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. Among other things, these statutes require that all students with documented disabilities be guaranteed a learning environment that provides for reasonable accommodations for their disabilities. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409) 880-1737 or visit the office in Student Services, Cecil Beeson Building. You may also visit the online resource at <http://www.lit.edu/depts/studerv/special/defaults.aspx>

Student Code of Conduct Statement

It is the responsibility of all registered Lamar Institute of Technology students to access, read, understand and abide by all published policies, regulations, and procedures listed in the *LIT Catalog and Student Handbook*. The *LIT Catalog and Student Handbook* may be accessed at www.lit.edu or obtained in print upon request at the Student Services Office. Please note that the online version of the *LIT Catalog and Student Handbook* supersedes all other versions of the same document.

Starfish

LIT utilizes an early alert system called Starfish. Throughout the semester, you may receive emails from Starfish regarding your course grades, attendance, or academic performance. Faculty members record student attendance, raise flags and kudos to express concern or give praise, and you can make an appointment with faculty and staff all through the Starfish home page. You can also login to Blackboard or MyLIT and click on the Starfish link to view academic alerts and detailed information. It is the responsibility of the student to pay attention to these emails and information in Starfish and consider taking the recommended actions. Starfish is used to help you be a successful student at LIT.



Course Schedule

| Week | Topic | Reference |
|---------------------------|---|---|
| 1 st Class Day | Go over Syllabus and Class Rules And Begin Systolic Function | Doppler PP from Fall Semester |
| Week 1 | Ventricular Systolic Function/Dysfunction | Power point/ The Notebook:Pgs:72-124 |
| Week 2 | Ventricular Systolic Function/Dysfunction | Power point/ The Notebook:Pgs:72-124 |
| Week 3 | Ventricular Systolic Function/Dysfunction | Power point/ The Notebook:Pgs:72-124 |
| Week 4 | Ventricular Systolic Function/Dysfunction/ TEST 1 | Power point/ The Notebook:Pgs:72-124 |
| Week 5 | Ventricular Diastolic function/Dysfunction | Power point/ The Notebook:Pgs:72-124 |
| Week 6 | Ventricular Diastolic function/Dysfunction | Power point/ The Notebook:Pgs:72-124 |
| Week 7 | Ventricular Diastolic function/Dysfunction | Power point/ The Notebook:Pgs:72-124 |
| Week 8 | Ventricular Diastolic function/Dysfunction/ TEST 2 | Power point/ The Notebook:Pgs:72-124 |
| Week 9 | SPRING BREAK | |
| Week 10 | Stress Echo | Power point/ The Notebook: Pgs:136-155 |
| Week 11 | TEST 3/ Ischemic Heart Disease | Power point/ The Notebook: Pgs:228-233 |
| Week 12 | Ischemic Heart Disease/CHF/Myocarditis | Power point/ The Notebook: Pgs:228-233/ 247-250/251-253 |

| Week | Topic | Reference |
|-------------|--------------------------------|-----------------------------------|
| Week 13 | CHF/Myocarditis/ TEST 4 | The Notebook: Pgs:247-250/251-253 |
| Week 14 | RESEARCH PROJECTS | The Notebook Pgs: 37-48 |
| Week 15 | RESEARCH PROJECTS | |
| Week 16 | Review for Final | |
| Week 17 | FINAL EXAM | |

Contact information:

Instructor: Melissa Mann, RDMS, RVT, RDCS
Office: Room 237, MPC Building
Telephone: (409) 981-6813
E-mail: mamann@lit.edu
Office hours: Posted on door