

DSAE 2335 3A1

ADVANCED CARDIAC SONOGRAPHY

CREDIT

3 SCH Semester Credit Hours (3 hours lecture)

MODE OF INSTRUCTION

Face to Face Instruction

PREREQUISITE/CO-REQUISITE:

Passed all previous sonography courses.

COURSE DESCRIPTION

Advanced cardiac sonography procedures. Topics include stress echo, related diagnostic imaging, and related noninvasive cardiac testing.

COURSE OBJECTIVES

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

- Describe the procedures and applications of stress echocardiography.
- Identify alternate diagnostic modalities and their correlation with cardiac sonography.
- Write technical reports based upon the findings of the exam.

INSTRUCTOR CONTACT INFORMATION

Instructor:	Melissa Mann	(Lecture)
Email:	mamann@lit.edu	
Office Phone:	Mrs. Mann 409-257-0057	
Office Location:	GATEWAY 111	
Office Hours:	Please see Starfish to schedule an appointment	

REQUIRED TEXTBOOK AND MATERIALS

1. The Notebook 8.0 edition, by Susan King DeWitt, BS, RDCS, RCS
<http://echocardiographer.tripod.com> as well as the workbook that corresponds with this textbook.
2. Computer with internet access
3. Webcam and mirror for taking exams

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. **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 15 minutes/class or more than 2 consecutive classes)** will result in an absence being awarded. Also, leaving class early 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 the LIT Emergency Notification System. 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.**

- The terminology excused or unexcused absence does not apply to this class. All absences are equal. Therefore, no matter the circumstances involved in the student's absence it will be counted towards the total for the semester.
- The sign-in sheet will be taken up 15 minutes after class starts. If you are more than 15 minutes late to class, you will be counted absent. Also, if you leave the classroom for more than 15 minutes you will be counted absent.
- When absent, the student is required to contact the instructor and make them aware of the absence and to obtain any missed assignments and/or information for the missed class.

DROP POLICY

If you wish to drop a course, you are 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.

LECTURE COURSE CALENDAR

WEEK	TOPIC	READINGS	ASSIGNMENTS (Due on this Date)
1 08-24	Review Info/ Syllabus/Resume Info/ Ch XII Cardiomyopathy PP	Syllabus/Resume Info and Interview Info on Blackboard	
2 08/31	CH. XII Cardiomyopathy pp <u>T9 REMOTE (VIRTUAL) TRAINING for STRESS ECHO PACKAGE (10- 11)</u>	Unit I PPs and Homework Assignments via Blackboard	
*	<u>INTERVIEW QUESTIONS ASSIGNMENT</u>		<u>DUE BY 09/06/26 @ MIDNIGHT ON BLACKBOARD</u>

3 09-07	NO CLASS – HOLIDAY LABOR DAY		
4 09-14	Practice Echo Scan	Unit I PPs and Homework Assignments via Blackboard	<u>UNIT I TEST OPEN ON</u> <u>Blackboard</u> <u>9/14/26– 9/18/26</u> <u>HOMEWORK FOR UNIT</u> <u>I TEST DUE BEFORE</u> <u>TAKING TEST ON</u> <u>Blackboard</u> <u>BOTH DUE 9/18/26</u> <u>@ 8 PM</u>
5 09-21	CH. XIV Myocarditis PP (Review) CH. XV Pericarditis PP CH. XVI Pericardial Effusion and Tamponade (Review) PP	Unit II PPs and Homework Assignments via Blackboard	
*	<u>RESUMES:</u> <u>ROUGH DRAFT</u>	Review Materials/Instructions via Blackboard	<u>DUE BY 09/30/26 @</u> <u>MIDNIGHT ON</u> <u>BLACKBOARD</u>
6 09-28	CH. XII Endocarditis PP (Review)/ <u>FINAL ECHO SCAN FINAL</u> <u>TEST</u> <u>(DUE BY MIDNIGHT</u> <u>ON CORESOUND</u> <u>ON 9/29/25)</u>	Unit II PPs and Homework Assignments via Blackboard <u>Review Course</u> <u>Materials from URR</u> <u>over</u> <u>Cardiac Anatomy,</u> <u>Cardiac Hemodynamics</u> <u>Cardiac Physiology</u> <u>TTE Parasternal Views,</u> <u>TTE Apical Views, TTE</u> <u>Subcostal and</u> <u>Supplemental Views</u> <u>TEE and Additional</u> <u>Cardiac Imaging</u>	<u>UNIT II TEST OPEN ON</u> <u>Blackboard</u> <u>09/28/26 – 10/02/26</u> <u>HOMEWORK FOR UNIT</u> <u>II TEST DUE BEFORE</u> <u>TAKING TEST ON</u> <u>Blackboard</u> <u>BOTH DUE 10/02/26</u> <u>@ 8 PM</u>
7 10-05	CH. XIX Congenital Anomalies PP	Unit III PPs and Homework Assignments via Blackboard	

		<u>Review Course</u> <u>Materials from URR</u> <u>over</u> <u>Cardiac Anatomy,</u> <u>Cardiac Hemodynamics</u> <u>Cardiac Physiology</u> <u>TTE Parasternal Views,</u> <u>TTE Apical Views, TTE</u> <u>Subcostal and</u> <u>Supplemental Views</u> <u>TEE and Additional</u> <u>Cardiac Imaging</u>	
*	<u>ARDMS AE CTL Exam:</u> <u>Anatomy & Physio. Pt 1</u> <u>ARDMS AE CTL Exam:</u> <u>Anatomy & Physio. Pt 2</u>	<u>Review Course</u> <u>Materials from URR</u> <u>over</u> <u>Cardiac Anatomy,</u> <u>Cardiac Hemodynamics</u> <u>Cardiac Physiology</u> <u>TTE Parasternal Long</u> <u>and Short Views, TTE</u> <u>Apical Views, TTE</u> <u>Subcostal and</u> <u>Supplemental Views</u> <u>TEE and Additional</u> <u>Cardiac Imaging</u>	<u>URR Click to Learn</u> <u>EXAMS DUE BY</u> <u>10/11/26 @</u> <u>MIDNIGHT ON</u> <u>BLACKBOARD</u>
8 10-12	CH. XIX Congenital Anomalies PP/ Baptist Breakfast	Unit III PPs and Homework Assignments via Blackboard <u>Review Course</u> <u>Materials from URR</u> <u>over</u> <u>General Information</u> <u>and Physics,</u> <u>Instrumentation,</u> <u>System Features and</u> <u>Image Optimization</u>	<u>UNIT III TEST OPEN ON</u> <u>Blackboard</u> <u>10/12/26 – 10/16/26</u> <u>HOMEWORK FOR UNIT</u> <u>III TEST DUE BEFORE</u> <u>TAKING TEST ON</u> <u>Blackboard</u> <u>BOTH DUE 10/16/26</u> <u>@ 8 PM</u>
*	<u>RESUMES:</u> <u>FINAL DRAFT</u>	Review Materials/Instructions via Blackboard	<u>DUE BY 10/18/26 @</u> <u>MIDNIGHT ON</u> <u>BLACKBOARD</u>

*	<u>CTL Exam: Clinical Care & Safety</u> <u>CTL Exam: Instrumentation</u>	<u>Review Course Materials from URR over General Information and Physics, Instrumentation, System Features and Image Optimization</u>	<u>URR Click to Learn EXAMS DUE BY 10/18/26 @ MIDNIGHT ON BLACKBOARD</u>
9 10-19	<u>*CTL: Pathology - MV & TV</u> <u>*CTL: Pathology – AV/ PV</u>	<u>Prior to Class: Review Course Materials from URR over MV and TV Disease/ AOV and PV Disease/ Prosthetic Valves</u>	IN CLASS Complete these Click to Learn assignments and submit them on Blackboard by <u>MIDNIGHT.</u>
10 10-26	* CTL: Pathology - Coronary & Aorta * CTL: Pathology- Adult Congenital	<u>Prior to Class: Review Course Materials from URR over Abnormalities of Aorta, CAD, as well as all Defect info (Septal Defects, Defects of Right Heart, Complex Congenital Defects, Defects causing Stenosis/ Regurce</u>	IN CLASS Complete these Click to Learn assignments and submit them on Blackboard by <u>MIDNIGHT.</u>
11 11-02	GUEST SPEAKER Strain Demonstration in Lab/Cardio-oncology CH. XX 3D/RT3D Echocardiography: The basics/ (Watch Collaborate on BB and Complete Test)	Unit IV PPs and Homework Assignments via Blackboard Review Materials via Blackboard	<u>UNIT IV TEST OPEN ON Blackboard 11/02/26 – 11/08/26</u> <u>HOMEWORK FOR UNIT IV TEST DUE BEFORE TAKING TEST ON Blackboard BOTH DUE 11/08/26 @ 8 PM</u>
12 11-9	* CTL: Pathology- Miscellaneous * CTL: Pathology- Infection, CM, PEff	<u>Prior to Class: Review Course Materials from URR over Signs/Symptoms and Risk Factors for Cardiac Disease, Cardiomyopathy,</u>	IN CLASS Complete these Click to Learn assignments and submit them on Blackboard by <u>MIDNIGHT.</u>

		<u>Cardiac Infection, Cardiac Tumors, Volume and Pressure Overload, Pericardial Effusion</u>	
13 11-16	* CTL Exam: Measurements Pt1 * CTL Exam: Measurements Pt2 * CTL Exam: Measurements Pt3	<u>Prior to Class: Review of Course Materials from URR over Measurements and Equations, Most Commons and General Info for CCI Users</u>	<u>IN CLASS</u> Complete these Click to Learn assignments and submit them on Blackboard by <u>MIDNIGHT.</u>
*	<u>BLACKBOARD RESEARCH ASSIGNMENT</u>	Review Materials and instructions via Blackboard	<u>DUE BY 11/22/26 @ MIDNIGHT ON BLACKBOARD</u>
14 11-23	ARDMS Adult Echo Mock Registry Exam A25	Review Any Materials on BB or URR prior to class	<u>IN CLASS</u> Complete the assigned Mock Registry and submit it on Blackboard by <u>MIDNIGHT.</u>
*	ARDMS Adult Echo Mock Registry Exam B25		<u>DUE BY 11/26/25 @ MIDNIGHT ON BLACKBOARD</u>
15 11-30	Review for final Exam	Review Any Materials on BB or URR prior to class	
*	<u>TECHNICAL REPORTS/ RESEARCH/DESIGN/ ROLE ASSIGNMENT</u> (TWO SEPARATE ASSIGNMENTS/PATIENTS)	Review Materials and instructions via Blackboard	<u>DUE BY 12/01/26 @ MIDNIGHT ON BLACKBOARD</u>
16 12-07	<u>CUMULATIVE FINAL EXAM</u>	Review Materials via Blackboard	<u>FINAL EXAM OPEN ON Blackboard 12/01/26-12/07/26 FINAL EXAM MUST BE TAKEN VIA BLACKBOARD BY NOON ON 12/07/26</u>

- This schedule is subject to change at the discretion of the instructor.

*******OPTIONAL MACHINE REMOTE TRAINING*******

9/2/26:	9:30 -10:30 AM	Basic Measurements and Reporting
9/9/26:	9:30 -10:30 AM	Advanced 2D Measurements including AFI

COURSE EVALUATION

Final grades will be calculated according to the following criteria:

Semester grades will be calculated from unit tests, lecture final exam, lab participation, lab scan tests, research assignment and homework assignments.

- Unit tests/ CTL and Mock Exams/Final (75%)
 - (Unit Tests/CTL Exams/Mock Exams worth 50%/ Final Exam worth 25%)
- Homework/ Mock Exams/Research Project/ Assignments/Scan Test (25%)

Course Requirements

1. Unit tests
2. Reading assignments
3. Click to Learn Exams
4. Mock Exams
5. Interview Questions Assignments
6. Resume
7. Homework
8. Blackboard Research Assignment
9. Technical Report Assignments, etc.
10. Final Exam

Course Outline

- A. LIT
 - a. Policies
 - b. Academic calendar
 - c. Classroom policies
- B. The Stress Echocardiogram
 - a. Cardiac response to stress
 - i. Wall motion
 - ii. Wall motion index
 - iii. Criteria for a positive SE
 - b. Types
 - i. Exercise stress echo
 - ii. Pharmacological stress echo

- c. Contraindications
 - i. Advantages
 - ii. Disadvantages
- C. Cardiomyopathy
 - a. Types
 - i. Dilated CMO
 - ii. Hypertrophic CMO
 - iii. Restrictive/Infiltrative CMO
 - b. Pathophysiology and Hemodynamics
- D. Diseases of the Heart Wall
 - a. Myocarditis
 - i. Etiology
 - ii. Signs and symptoms
 - iii. Treatment
 - b. Pericarditis/constrictive pericarditis
 - i. Etiology
 - ii. Signs and symptoms
 - iii. Treatment
 - c. Pericardial effusion
 - i. Tamponade
 - d. Pathophysiology and Hemodynamics
- E. Congenital anomalies
 - a. Septal defects
 - i. ASD
 - ii. VSD
 - iii. PDA
 - b. Endocardial cushion defect
 - c. Cleft Mitral valve
 - d. Pulmonic stenosis
 - e. Coarctation of the aorta
 - f. Ebstein anomaly
 - g. Tetralogy of Fallot
 - h. Transposition of the great arteries
 - i. Hypoplastic left heart syndrome
 - j. Pathophysiology and Hemodynamics
 - k. Misc.
- F. 3D/RT3D Echocardiography & Strain
 - a. History
 - b. Real time
 - i. 4D echocardiography
 - c. Strain Basics
 - i. Cardio-oncology uses

- G. Alternate Diagnostic Modalities and correlation with echocardiography
 - a. Blackboard Assignment
- H. Resumes/Interview Questions/ Recent Developments in Sonography/ Research Statistics and Design/ Role of Sonography in Patient Management
 - a. Assignments
- I. Review of:
 - a. Heart Anatomy
 - b. 2D Echo
 - c. M-Mode Echo
 - d. Coronary Arteries and Heart Walls
 - e. Cardiac Testing
 - f. Valvular Heart Disease
 - g. Prosthetic Valves
 - h. Cath Gradients
 - i. Ischemic Heart Disease
 - j. Heart Failure
 - k. Embryology
 - l. Myxomas, Masses, Missiles, etc.
 - m. Diseases of the Aorta
 - n. Cath Gradients
 - o. Technical Reports
 - p. measurements by echocardiographic features

GRADE SCALE

- 93-100 A
- 85-92 B
- 77-84 C **(must pass the class with a 77 or higher in order to graduate)**
- 69-76 D
- 0-68 F

Passing the technology portion of Adult Echocardiography board exam constitutes an automatic “A” in this course (due to mastery of course information). A small cumulative final exam will still have to be taken in conjunction.

TECHNICAL REQUIREMENTS

The latest technical requirements, including hardware, compatible browsers, operating systems, etc. can be online at <https://lit.edu/online-learning/online-learning-minimum-computer-requirements>. A functional broadband internet connection, such as DSL, cable, or Wi-Fi is necessary to maximize the use of online technology and resources.

DISABILITIES STATEMENT

The Americans with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. LIT provides reasonable accommodations as defined in the Rehabilitation Act of 1973, Section 504 and the Americans with Disabilities Act of 1990, to students with a diagnosed disability. The Special Populations Office is located in the Eagles' Nest Room 129 and helps foster a supportive and inclusive educational environment by maintaining partnerships with faculty and staff, as well as promoting awareness among all members of the Lamar Institute of Technology community. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409)-951-5708 or email specialpopulations@lit.edu. You may also visit the online resource at [Special Populations - Lamar Institute of Technology \(lit.edu\)](#).

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. 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.

ARTIFICIAL INTELLIGENCE STATEMENT

Lamar Institute of Technology (LIT) recognizes the recent advances in Artificial Intelligence (AI), such as ChatGPT, have changed the landscape of many career disciplines and will impact many students in and out of the classroom. To prepare students for their selected careers, LIT desires to guide students in the ethical use of these technologies and incorporate AI into classroom instruction and assignments appropriately. Appropriate use of these technologies is at the discretion of the instructor. Students are reminded that all submitted work must be their own original work unless otherwise specified. Students should contact their instructor with any questions as to the acceptable use of AI/ChatGPT in their courses.

ADDITIONAL COURSE POLICIES/INFORMATION

1. No food, drinks, or use of tobacco products in class.
2. Cell Phones and any other electronic devices must be turned off while in class.
3. Do not bring children to class.
4. All assignments are due at the beginning of class and/or when stated in the syllabus. **LATE ASSIGNMENTS WILL NOT BE ACCEPTED and will result in a grade of ZERO!**
5. Four hours of community service will be **REQUIRED** this semester in this course. These hours **must be approved by the instructor** prior to service.

6. Exam Administration and Attendance Policy

All exams will be conducted in person on the dates specified unless otherwise communicated by the instructor. Students are required to bring their own laptops to class on exam days and must have the most recent version of the Respondus LockDown Browser installed and functioning. If a student fails to attend a scheduled in-person exam, a penalty of 10 points per day will be deducted from their exam score until the exam is completed.

7. Online Exam Policy

In the event that an exam is moved online, the use of a webcam in conjunction with the Respondus LockDown Browser will be required. If a student fails to complete the exam by the specified deadline, a grade of zero will be assigned after midnight on the due date. Prior to midnight, a deduction of 10 points per hour will be applied for late submissions, starting at the scheduled due time. **For example, if an exam is due at 7:00 PM and is submitted at 7:01 PM, the grade will be reduced by 10 points. If submitted at 8:00 PM, the deduction will be 20 points, and so on.** Note that the official due time will be determined by the individual instructor: the 7:00 PM time mentioned is for illustrative purposes only.

8. 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.
9. **Cheating on any (lecture/lab) exam results in immediate dismissal from the program and an F for the course.**

All exams will be online on Blackboard. You will be using LockDown Browser with Webcam Monitoring. The rules for the tests are:

- Disable all notifications on your computer. This is how LockDown Browser is used to take a test.
- Locate the “LockDown Browser” shortcut on the desktop and double-click it. (For Mac users, launch “LockDown Browser” from the Applications folder.)
- If prompted to close a blocked program (e.g. screen capture, instant messaging) choose Yes.
- Log into the course, navigate to the test and select it.
- A Startup Sequence will guide the student through a webcam check and other items required by the instructor.
- The test will then start.
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20-point deductions for each occurrence:

- Where you are taking your exam must be well lit. If it is not well lit, you will have 20 points deducted from your test.
- Your face must be visible the entire length of the test. If your face cannot be seen even for a few seconds you will have 20 points deducted from your test.
- No music should be playing, nor should a TV/radio/video be on in the background.
- You may not read the questions out loud. If you do so, you will automatically receive a 20-point deduction.
- You may not wear sunglasses, hats, hoodies, earbuds, headphones, etc. during the exam. Your ears must be fully visible throughout the entire exam, failure to comply with this will be a 20-point deduction. If you do this on another exam it will turn into a 50-point deduction.

50-point reduction or a zero on the entire test

- You must be in a private location. If another person is seen or heard while you are taking your test this could be misconstrued as cheating resulting in a 50-point reduction or a zero. That is up to the situation and your instructor.
- All phones, notes, books, and other papers must be removed from the testing location. If these items are seen during your exam, you receive an automatic zero on the exam.
- **YOU WILL ALSO HAVE TO TAKE TEST IN FRONT OF MIRROR** where your screen can be visualized at all times.
- Do NOT leave the exam room for any reason, if you do, it is an automatic 50-point deduction.
- Any suspicious activity that appears to be cheating will result in a zero.

Testing Tips

- You must use Google Chrome browser.
- You must have a webcam and a microphone attached to your computer.
- Be prepared to scan the room with a camera, if you cannot move your computer, you will need to have a mirror available to assist with scanning the room.

- It is the student's responsibility to ensure that ALL of the above requirements are met. By completing the verify signature portion of the exam, you are accepting responsibility for your actions during the exam. Failure to follow the requirements will result in deductions from your exam grade when reviewed by your instructor.
10. You will have the length of the class to finish an exam. No extra time will be given.
 11. If you fail any test, you are required to get ahold of me and schedule a collaborate session/in person session to review the material. It is your duty to be prepared for this meeting.
 12. Any taping of the material, when we go over tests/ results, will be considered cheating and you will be dismissed from the program. It is our duty to prepare you for the registry.
 13. 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.
 14. There will be no extra credit assignments given in this course.
 15. Additional class policies as defined by the individual course instructor and sonography handbook.