

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](mailto:mamann@lit.edu)

Office Phone: Mrs. Mann 409-257-0057

Office Location: GATEWAY 114

Office Hours: Please see Starfish to schedule an appointment

### REQUIRED TEXTBOOK AND MATERIALS

1. The Notebook 7.0 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 for taking exams

### ATTENDANCE POLICY

Approved: mm/2023



**LAMAR INSTITUTE  
OF TECHNOLOGY**

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 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.**

### 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 08-21	Review Info/ Syllabus Review/ Practice Echo Scan	Syllabus/Resume Info and Interview Info on Blackboard	
2 08-28	CH. XII Cardiomyopathy PP	Unit I PPs and Homework Assignments via Blackboard	
*	<b><u>INTERVIEW QUESTIONS ASSIGNMENT</u></b>		<b><u>DUE BY 08/29/23 @ MIDNIGHT ON BLACKBOARD</u></b>
3 09-04	<b>NO CLASS – HOLIDAY LABOR DAY</b>		
4 09-11	Ch XII Cardiomyopathy PP	Unit I PPs and Homework Assignments via Blackboard	<b><u>UNIT I TEST OPEN ON Blackboard 9/11/23 – 9/18/23</u></b>  <b><u>HOMEWORK FOR UNIT I TEST DUE BEFORE TAKING TEST ON Blackboard BOTH DUE 9/18/23 @ 5 PM</u></b>
5 09-18	CH. XIV Myocarditis PP (Review) CH. XV Pericarditis PP	Unit II PPs and Homework Assignments via Blackboard	

	CH. XVI Pericardial Effusion and Tamponade (Review) PP		
*	<b><u>MOCK EXAM # 1</u></b> <b><u>150 Question/</u></b> <b><u>3 Hour Option</u></b>	GCUS ONLINE PROGRAM	<b><u>DUE BY 09/20/23 @</u></b> <b><u>MIDNIGHT ON</u></b> <b><u>BLACKBOARD</u></b>
6 09-25	CH. XII Endocarditis PP (Review)/  <b><u>FINAL ECHO SCAN</u></b> <b><u>FINAL TEST</u></b> <b><u>(DUE BY MIDNIGHT</u></b> <b><u>ON CORESOUND</u></b> <b><u>ON 9/25/23)</u></b>	Unit II PPs and Homework Assignments via Blackboard	<b><u>UNIT II TEST OPEN ON</u></b> <b><u>Blackboard</u></b> <b><u>9/25/23 – 10/02/23</u></b>  <b><u>HOMEWORK FOR UNIT</u></b> <b><u>II TEST DUE BEFORE</u></b> <b><u>TAKING TEST ON</u></b> <b><u>Blackboard</u></b> <b><u>BOTH DUE 10/02/23</u></b> <b><u>@ 5 PM</u></b>
*	<b><u>RESUMES:</u></b> <b><u>ROUGH DRAFT</u></b>	Review Materials/Instructions via Blackboard	<b><u>DUE BY 09/29/23 @</u></b> <b><u>MIDNIGHT ON</u></b> <b><u>BLACKBOARD</u></b>
7 10-02	CH. XIX Congenital Anomalies PP	Unit III PPs and Homework Assignments via Blackboard	
*	<b><u>MOCK EXAM # 2</u></b> <b><u>150 Question/</u></b> <b><u>3 Hour Option</u></b>	GCUS ONLINE PROGRAM	<b><u>DUE BY 10/07/23 @</u></b> <b><u>MIDNIGHT ON</u></b> <b><u>BLACKBOARD</u></b>
8 10-09	CH. XIX Congenital Anomalies PP	Unit III PPs and Homework Assignments via Blackboard	<b><u>UNIT III TEST OPEN ON</u></b> <b><u>Blackboard</u></b> <b><u>10/09/23 – 10/16/23</u></b>  <b><u>HOMEWORK FOR UNIT</u></b> <b><u>III TEST DUE BEFORE</u></b> <b><u>TAKING TEST ON</u></b> <b><u>Blackboard</u></b> <b><u>BOTH DUE 10/16/23</u></b> <b><u>@ 5 PM</u></b>
*	<b><u>RESUMES:</u></b> <b><u>FINAL DRAFT</u></b>	Review Materials/Instructions via Blackboard	<b><u>DUE BY 10/15/23 @</u></b> <b><u>MIDNIGHT ON</u></b> <b><u>BLACKBOARD</u></b>
9 10-16	<b><u>MOCK EXAM # 3</u></b>	GCUS ONLINE PROGRAM	<b><u>AT MPC ON MAIN</u></b> <b><u>CAMPUS</u></b>

	<b><u>150 Question/ 3 Hour Option DURING CLASS IN MEDIA LAB</u></b>		
<b>10 10-23</b>	CH. XX 3D/RT3D Echocardiography: The basics/Strain Demonstration in Lab/Cardio-oncology Registry Review: Anatomy/2D/M-Mode/EKG	Unit IV PPs and Homework Assignments via Blackboard	<b><u>UNIT IV TEST OPEN ON Blackboard 10/23/23 – 10/30/23</u></b>  <b><u>HOMEWORK FOR UNIT IV TEST DUE BEFORE TAKING TEST ON Blackboard BOTH DUE 10/30/23 @ 5 PM</u></b>
<b>11 10-30</b>	<b><u>MOCK EXAM # 4 150 Question/ 3 Hour Option DURING CLASS IN MEDIA LAB</u></b>	GCUS ONLINE PROGRAM	<b><u>AT MPC ON MAIN CAMPUS</u></b>
<b>12 11-06</b>	Registry Review: Anatomy/2D/M-Mode/EKG/ Walls/ Arteries/ Testing (St Echo, TEE, etc)	Review Materials via Blackboard	
<b>*</b>	<b><u>MOCK EXAM # 5 150 Question/ 3 Hour Option</u></b>	GCUS ONLINE PROGRAM	<b><u>DUE BY 11/09/23 @ MIDNIGHT ON BLACKBOARD</u></b>
<b>13 11-13</b>	Registry Review: Valvular Disease, Prosthetic Valves	Review Materials via Blackboard	
<b>*</b>	<b><u>BLACKBOARD RESEARCH ASSIGNMENT</u></b>	Review Materials and instructions via Blackboard	<b><u>DUE BY 11/19/23 @ MIDNIGHT ON BLACKBOARD</u></b>
<b>14 11-20</b>	Registry Review: Embryology/Myxomas, Masses, Missiles, etc/ IHD/ HF, etc	Review Materials via Blackboard	
<b>*</b>	<b><u>ETATOS CASES</u></b>	ETATOS (Cases to be completed listed on Blackboard)	<b><u>DUE BY 11/24/23 @ MIDNIGHT ON ETATOS WEBSITE</u></b>
<b>*</b>	<b><u>MOCK EXAM # 6 150 Question/ 3 Hour Option</u></b>	GCUS ONLINE PROGRAM	<b><u>DUE BY 11/26/23 @ MIDNIGHT ON BLACKBOARD</u></b>

<b>15 11-27</b>	Registry Review: Diseases of Aorta, Cath Gradients, etc.  Review Technical Reports / Role of Sonography in patient management/ Research Statistics and Design with Out of Class Assignment to Follow	Review Materials and instructions via Blackboard	
<b>*</b>	<b><u>TECHNICAL REPORTS/ RESEARCH/DESIGN/ ROLE ASSIGNMENT</u></b>	Review Materials and instructions via Blackboard	<b><u>DUE BY 12/02/23 @ MIDNIGHT ON BLACKBOARD</u></b>
<b>16 12-04</b>	<b><u>CUMULATIVE FINAL EXAM</u></b>	Review Materials via Blackboard	<b><u>FINAL EXAM OPEN ON Blackboard 11/27/23 – 12/04/23 FINAL EXAM MUST BE TAKEN VIA BLACKBOARD BY NOON ON THIS DAY</u></b>

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

### **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/ Final **(80%)**
  - **(Unit Tests worth 60%/ Final Exam worth 20%)**
- Homework/ Mock Exams/Research Project/ ETATOS Cases/ Scan Test **(20%)**

### **Course Requirements**

1. Unit tests
2. Reading assignments
3. Mock Exams
4. Interview Questions Assignments
5. Resume
6. Homework
7. Blackboard Research Assignment
8. ETATOS Cases
9. Technical Report Assignment, 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
  - b. ETATOS Cases
- 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 WiFi 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](mailto: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](http://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.

### **ADDITIONAL COURSE POLICIES/INFORMATION**

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. **All exams will be on the dates specified unless the instructor makes a change. In case of an absence on exam day, the student will have a 10 point reduction on his/her test score. The score will continue to drop 10 points for every class day missed following the test. Also, if the student attends any sonography classes on test day, he/she must take the test that day or a zero will be given. The student will have to make up the test if missed, the class day that the student returns.**
5. The terminology excused or not excused 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.
6. All assignments are due when stated **at the beginning of class or online at the dates given on the syllabus.** 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**. Missed in-class assignments receive a grade of **0**.
7. 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.**
8. All exams will be online. 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.

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 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 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 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.
- 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

1. 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.
2. 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.

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

10. You will have the length of the class to finish an exam. No extra time will be given.
11. Class roll is taken by the sign in sheets. If you did not sign in, you will be counted absent.
12. 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.
13. When absent, the student is required to contact the instructor to obtain make-up assignment for missed class. It is the student's responsibility to make up lecture/lab assignments or a grade of zero will be given.
14. 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.
15. There will be no extra credit assignments given in this course.
16. 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.
17. If you fail any test, you are required to get ahold of me and schedule a collaborate session to review the material. It is your duty to be prepared for this meeting.
18. 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.
19. Additional class policies as defined by the individual course instructor and sonography handbook.