

DSAE 1303 3A0/5A0

INTRODUCTION TO CARDIAC SONOGRAPHY TECHNIQUES

**CREDIT**

3 SCH Semester Credit Hours (2 hours lecture, 2 hours lab)

**MODE OF INSTRUCTION**

Face to Face Instruction

**PREREQUISITE/CO-REQUISITE:**

Acceptance into the cardiac sonography program.

**COURSE DESCRIPTION**

An introduction to scanning techniques and procedures with hands-on experience in a lab setting. Emphasis is placed on the sonographic evaluation of the normal adult heart.

**COURSE OBJECTIVES**

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

- Demonstrate proper routine scanning techniques on normal subjects.
- Demonstrate appropriate and accurate measurements in each modality.
- Describe the features of a normal echocardiogram.
- Demonstrate ergonomic scanning techniques
- Demonstrate patient care and positioning.
- Integrate criteria for recognition, evaluation and quantification.

**INSTRUCTOR CONTACT INFORMATION**

Instructor: Melissa Mann (Lecture/Lab)  
Mark Adams (Lab)

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[maadams@lit.edu](mailto:maadams@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

Approved: MM/2024



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3. Webcam for taking exams

### Suggested Textbook and Materials

1. **Textbook of Clinical Echocardiography**  
By: Catherine Otto MD  
ISBN#978-1-4160-5559-4
2. **Sound Advice for the Ultrasound Lab: Echocardiographic Protocol**  
By: Tom Whelan RT(R), RVT, RDCS, FASE  
The Advanced Health Education Center

### 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 (6-3 – 6/5)	(M) Go over Syllabus and Class Rules	Blackboard/Handout PP/ Notebook: (Chapter 1: Pages 1-24)	

	<b>(W) Begin Thorax PP (Cross sectional/relational anatomy of the Thorax)</b>	Unit I PPs and Homework Assignments via Blackboard	
<b>2 (6/10- 6/12)</b>	<b>(M) Continue Thorax PP (Cross sectional/relational anatomy of the Thorax)/  (W) TEST I</b>	<i>Blackboard/ Notebook Notebook (Chapter 1- Pages 1-24)/ Unit I PPs and Homework Assignments via Blackboard</i>	<b><u>UNIT I TEST OPEN ON Blackboard 6/11/24 – 6/12/24</u></b>  <b><u>HOMEWORK FOR UNIT I TEST DUE BEFORE TAKING TEST ON Blackboard BOTH DUE 6/12/24 @ 7 PM</u></b>
<b>3 (6/17- 6/19)</b>	<b>(M) Intro to Echo TTE PP (Anatomy and Physiology of the Heart) (W) – HOLIDAY (NO CLASS)</b>	<i>Blackboard/ Notebook Chapter Notebook (Chapter I- Pages 1-24) / Chapter III Pages 41-52) Unit II PPs and Homework Assignments via Blackboard</i>	
<b>4 (6/24-6/26)</b>	<b>(M and W) Intro to Echo TTE PP (Anatomy and Physiology of the Heart)</b>	<i>Blackboard/ Notebook Chapter Notebook (Chapter I- Pages 1-24) / Chapter III Pages 41-52) Unit II PPs and Homework Assignments via Blackboard</i>	
<b>5 (7/1-7/3)</b>	<b>(M) Intro to Echo TTE PP (Anatomy and Physiology of the Heart)  (W) TEST 2</b>	<i>Blackboard/ Notebook Chapter Notebook (Chapter I- Pages 1-24) / Chapter III Pages 41-52) Unit II PPs and Homework Assignments via Blackboard</i>	<b><u>UNIT II TEST OPEN ON Blackboard 7/2/24 – 7/3/24</u></b>  <b><u>HOMEWORK FOR UNIT II TEST DUE BEFORE TAKING TEST ON Blackboard BOTH DUE 7/3/24 @ 7 PM</u></b>

6 (7/8-7/10)	(M and W) Parasternal Views PP	Blackboard/ Notebook Chapter III (Pages 41-52)/Chapter IVa Pages 61-82) Unit III PPs and Homework Assignments via Blackboard	
7 (7/15-7/17)	(M) Parasternal Views PP  (W) TEST 3	Blackboard/ Notebook Chapter III (Pages 41-52)/Chapter IVa Pages 61-82) Unit III PPs and Homework Assignments via Blackboard	<b><u>UNIT III TEST OPEN</u></b> <b><u>ON Blackboard</u></b> <b><u>7/16/24 – 7/17/24</u></b>  <b><u>HOMEWORK FOR</u></b> <b><u>UNIT III TEST DUE</u></b> <b><u>BEFORE TAKING</u></b> <b><u>TEST ON Blackboard</u></b> <b><u>BOTH DUE 7/17/24</u></b> <b><u>@ 7 PM</u></b>
8 (7/22 -7/24)	(M/W) APICAL VIEWS PP	Blackboard/Notebook Chapter III (Pages 41-52)/Chapter IVa (Pages 83-94) Unit IV PPs and Homework Assignments via Blackboard	
9 (7/29-7/31)	(M)TEST 4  (W) SUBCOSTAL/ SUPRASTERNAL VIEWS PP	Blackboard/Notebook Chapter III (Pages 41-52)/Chapter IVa (Pages 95-105) Unit IV PPs and Homework Assignments via Blackboard	<b><u>UNIT IV TEST OPEN</u></b> <b><u>ON Blackboard</u></b> <b><u>7/29/24 – 7/30/24</u></b>  <b><u>HOMEWORK FOR</u></b> <b><u>UNIT IV TEST DUE</u></b> <b><u>BEFORE TAKING</u></b> <b><u>TEST ON Blackboard</u></b> <b><u>BOTH DUE 7/30/24</u></b> <b><u>@ 7 PM</u></b>
10 (8/5-8/7)	(M) SUBCOSTAL/ SUPRASTERNAL VIEWS PP	Blackboard/Notebook Chapter III	<b><u>UNIT V TEST OPEN</u></b> <b><u>ON Blackboard</u></b> <b><u>08/06/24 – 8/07/24</u></b>

	<b>(W) TEST 5</b>	<i>(Pages 41-52)/Chapter IVa (Pages 95-105) Unit IV PPs and Homework Assignments via Blackboard</i>	<b><u>HOMework FOR UNIT V TEST DUE BEFORE TAKING TEST ON Blackboard BOTH DUE 08/07/24 @ 7 PM</u></b>
<b>11 (8/12-8/14)</b>	<b>(M) TEST 6 - ABBREVIATION TEST (DURING CLASS TIME – NOT ON BB)  (W) 8/14/ LAB SCAN FINAL DURING LECTURE AND LAB TIME</b>	<i>Abbreviations for Test - --- will not be discussed in class. You are responsible for memorizing on your own</i>	<b><u>TEST VI – ABBREVIATION TEST DUE DURING CLASS ON 8/12/24</u></b>

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

#### LAB COURSE CALENDAR

<b>DATE</b>	<b>LAB ACTIVITY</b>	<b>INFO NEEDED</b>	<b>ASSIGNMENTS (Due on this Date)</b>
<b>6/5</b>	Go over Syllabus and Class Rules/ Continue Thorax Lecture	Protocol / Tips/ Instructions found on Blackboard	
<b>6/12</b>	Knobology/ Begin Parasternal LAX	Protocol / Tips/ Instructions found on Blackboard	<b><u>VIDEO LAB QUIZ # 1 DUE ON BB @ MIDNIGHT ON FRIDAY, JUNE 14, 2024</u></b>
<b>6/19</b>	HOLIDAY	NO CLASS	
<b>6/26</b>	Parasternal LAX	Protocol / Tips/ Instructions found on Blackboard	
<b>7/03</b>	Parasternal SAX	Protocol / Tips/ Instructions found on Blackboard	
<b>07/10</b>	Review All Parasternal	Protocol / Tips/ Instructions found on Blackboard	<b><u>VIDEO LAB QUIZ # 2 DUE ON BB @ MIDNIGHT ON FRIDAY, JULY 12, 2024</u></b>

<b>07/17</b>	Apical Views	Protocol / Tips/ Instructions found on Blackboard	
<b>07/24</b>	Apical Views/ Subcostal Views	Protocol / Tips/ Instructions found on Blackboard	<b><u>VIDEO LAB QUIZ # 3</u></b> <b><u>IN CLASS</u></b> <b><u>WEDNESDAY,</u></b> <b><u>JULY 24, 2024</u></b>
<b>07/31</b>	Review Apical Views/ Subcostal Views	Protocol / Tips/ Instructions found on Blackboard	<b><u>VIDEO LAB QUIZ # 4</u></b> <b><u>IN CLASS</u></b> <b><u>WEDNESDAY,</u></b> <b><u>JULY 31, 2024</u></b>
<b>08/07</b>	Review all Views	Protocol / Tips/ Instructions found on Blackboard	
<b>08/14</b>	<b>SCAN FINALS</b>		<b>SCAN FINALS DUE</b> <b>08/14/24</b>  <b>VIDEO LAB QUIZ # 5</b> <b>DUE BY NOON ON BB</b> <b>WEDNESDAY,</b> <b>AUGUST 14, 2024</b>

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

### **COURSE EVALUATION**

**There are two components to this course, lecture and lab. They come together for a combined overall grade. Lecture is worth 74% of the overall grade and Lab is worth 26%. The exact breakdown is found below.**

Final Semester grades will be calculated according to the following criteria:

<b>1.</b>	<b>Unit tests</b>	<b>69%</b>	
<b>2.</b>	<b>Class Participation/Homework</b>	<b>5%</b>	
<b>3.</b>	<b>Lab</b>	<b>26%</b>	
	<b>a. Lab Video Quizzes</b>		<b>(6.50% of the 26%)</b>
	<b>b. Participation</b>		<b>(13% of the 26%)</b>
	<b>c. Lab Final</b>		<b>(6.50% of the 26%)</b>

### **GRADE SCALE**

- 93-100 A
- 85-92 B

- 77-84 C (MUST PASS THE CLASS WITH A 77 or HIGHER)
- 69-76 D (NOT ABLE TO CONTINUE IN THE SONOGRAPHY PROGRAM)
- 0-68 F

## Course Outline

### A. Cross sectional anatomy/relational anatomy of the thorax

- a. Chest cavity
  - i. Bony thorax
  - ii. Lungs
  - iii. Mediastinum
  - iv. Heart
  - v. Breast

### B. Normal Cardiac Anatomy and Physiology – Chapter 1

- a. Anatomy of the heart
  - i. Cardiovascular Circulation (including pulmonary artery and venous return)
  - ii. Cardiac Anatomy and Terminology
  - iii. Pericardium
  - iv. Chambers vessels and valves (anatomy/relationships/function)
  - v. Coronary circulation
- b. Physiology of the heart
  - i. Blood flow through the heart and lungs
- c. Phases of the cardiac cycle
  - i. Systole
  - ii. Diastole
  - iii. Isovolumic times
  - iv. Intracardiac pressures

### C. Echocardiography Windows and Imaging Planes - Chapter 3

- a. Parasternal
- b. Apical
- c. Subcostal
- d. Suprasternal

### D. Technique

- a. Knobology – (specific to echo) – Mostly taught in intro to Sonography.
  - i. Artifacts – (specific to echo) – Mostly taught in intro to Sonography.
- b. Ergonomics (focused on in intro to Sonography)
  - i. Patient positioning
  - ii. Sonographer technique and positioning

## 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](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. 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. All exams will be on the dates specified unless the instructor makes a change. **If the student misses an exam due date, the student will be given a 0 after midnight on the day that it was due.** Before midnight the day of the test, the score will drop 10 points for every hour the exam is late beginning with the time it was due. For example, if the test is due at 7:00 and the student turns in the exam at 7:01 the grade drops 10 points. At 8:00 pm, the grade will drop 20 points, etc. The time is set by the individual instructor so 7:00 pm is only an example.
6. 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.

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

7. 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.
    -

**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 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.
- 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.
8. You will have the length of the class to finish an exam. No extra time will be given.
  9. 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.
  10. 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.
  11. 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.
  12. There will be no extra credit assignments given in this course.
  13. Additional class policies as defined by the individual course instructor and sonography handbook.

## **Texas HB 1508 and Texas Occupations Code 58.001:**

As a point of information required by Texas HB 1508 and the Texas Occupations Code 58.001, if you are applying for admission to a program that may prepare an individual for an initial occupational license as defined under Texas Occupations Code 58.001 and/or if you later decide to change to a program that prepares you for an initial occupational license as defined under Texas Occupations Code 58.001, in accordance with state law, please be advised of the following:

1. An individual who has been convicted of an offense may be ineligible for issuance of an occupational license upon completion of the educational program.
2. Each licensing authority that may issue an occupational license to an individual who completes an educational program must establish guidelines which state the reasons a particular crime is considered to relate to a particular license and any other criterion that affects the decisions of the licensing authority.
3. Local or county licensing authorities may issue additional guidelines related to criminal history. Applicants should contact their respective local or county licensing authority for more details.
4. A person may request a criminal history evaluation letter regarding the personal eligibility for a license issued by a licensing authority under Texas Occupations Code 53.102.

Applicants are encouraged to review all applicable eligibility requirements related to the respective occupational license. Questions related to eligibility requirements should be directed to the applicable licensing authority.