

Advanced Echocardiography (DSAE 2335)



Credit: 3 semester credit hours (3 hours lecture)

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

Course Description

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

Required Textbook and Materials

The Notebook and The Workbook

By: Susan King DeWitt, BS, RDCS, RCS (author and publisher)

Email: <http://echocardiographer.tirpod.com> Phone: (912) 674 – 4786

Suggested Textbook and Materials

1. Textbook of Clinical Echocardiography

By: Catherine Otto MD

ISBN#978-1-4160-5559-4

Course Objectives

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

1. Describe the procedures and applications of stress echocardiography.
2. Identify and describe alternate diagnostic modalities and their correlation with echocardiography.
3. Demonstrate the ability to write technical reports based upon the findings of the echocardiographic exam.

Course Outline

- A. Ischemic Heart Disease
 - a. Coronary artery anatomy
 - b. Abnormal wall motion
 - c. Myocardial infarction
 - d. Pericardial Disease
 - i. Effusion
 - ii. Tamponade
- B. Heart Failure/Myocarditis
- C. Pericardial Disease
 - a. Pericarditis
 - b. Constrictive Pericarditis
 - c. Effusion/Tamponade
- D. Advanced echocardiographic Modalities
 - a. Cardiac catheterization
 - b. 3D echocardiography
 - c. Tissue Doppler

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- d. Speckle Tracking Strain Imaging
- e. Dyssynchrony
- f. Intraoperative echocardiography
- g. Echo-guided procedures
- h. Targeted obstetric exam
- E. Stress echocardiography
 - a. Exercise stress test
 - b. Stress echocardiography
 - i. Pharmacological stress test
 - ii. Non pharmacological stress test
 - c. Nuclear stress test (radionuclide studies)
- F. Stress echocardiography
 - a. Indications for stress testing
 - b. Pharmacologic agents
 - c. Contraindications
 - i. Limitations and safety
- G. Contrast echocardiography
 - a. Contrast agents
 - i. Left heart - Definity
 - ii. Right heart – saline
 - b. Applications
 - c. Limitations and safety
- H. Transesophageal echocardiography
 - a. Instrumentation
 - b. Applications
 - c. Limitations and safety
- I. Cardiomyopathies
 - a. Dilated cardiomyopathy
 - b. Hypertrophic cardiomyopathy
 - i. Concentric
 - ii. Asymmetrical
 - c. Restrictive cardiomyopathy
 - d. Arrhythmogenic cardiomyopathy
- J. Effect of systemic diseases on cardiovascular anatomy and physiology
 - a. Non-cardiac diseases
- K. Congenital Heart Disease
 - a. Congenital heart disease
 - i. Pathophysiology
 - b. Genetic syndromes and chromosome anomalies
 - c. Corrective procedures
 - d. Post operative repairs and evaluation
 - e. Current and future approaches to caring for the:
 - i. Fetus with CHD
 - ii. Pediatric patient with CHD
 - iii. Adult patient with CHD
 - f. Fetal intervention for fetal heart disease

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- L. Cardiac Neoplasms and Masses
 - a. Missiles, Masses, Myxomas
 - b. Cardiac Neoplasms
 - c. Cardiac trauma.
- M. Diseases of the aorta and great vessels
 - a. Dissection
 - b. Coarctation

Grade Scale

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

Course Evaluation

Semester grades will be calculated according to the following criteria:

- 1. Unit tests **95%**
- 2. Class Participation/Homework **5%**

Course Requirements

- 1. Unit tests
- 2. Blackboard assignments
- 3. Worksheets

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. Attendance Policy: Absences must be limited to serious illness and/or immediate family emergencies. Unexcused absences are not allowed. **Three (3) absences will result in a letter grade reduction. 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.

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6. 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**.
7. Cheating on any (lecture/lab) exam results in immediate dismissal from the program and an **F** for the course.
8. 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.

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.

Course Schedule

Week	Topic	Reference
Week 1	Ischemic Heart disease	The Notebook pgs. 228-233
Week 1	Pericardial Disease	The Notebook pgs. 254-256
Week 1	Heart failure/Myocarditis	The Note book pgs. 247-253
Week 2	Stress echocardiography	The Notebook pgs. 136-155
Week 2	Transesophageal Echocardiography	The Notebook pgs. 125-135
Week 3	Advanced Echocardiography	The Notebook pgs. 156-169, pgs. 297-302
Week 4	Test 1	
Week 4	Cardiomyopathies	The Notebook pgs. 234-246
Week 4	Cardiomyopathies	The Notebook pgs. 234-246
Week 5	Cardiomyopathies	The Notebook pgs. 234-246
Week 6	Test II	
Week 7	Effects of Systemic Diseases/Non Cardiac	Handout
Week 8	Congenital Heart Disease/Genetic Syndromes	The Notebook pgs. 279-296
Week 9	Post operative repairs Evaluation/Care	The Notebook pgs. 279-296
Week 10	Test III	The Notebook pgs. 234-246
Week 11	Cardiac Neoplasms and Masses	The Notebook pgs. 267-273
Week 12	Diseases of the aorta and great vessels	The Notebook pgs. 274-278
Week 12	Test IV	
Week 13	Catheter Gradients	The Notebook pgs. 158-169
Week 14	Basic Embryology Review	The Notebook pgs. 37-48

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Week	Topic	Reference
Week 15	Test V	
Week 16	Review	

Contact Information:

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Office Hours: 7:00-8:00am M-F, 2:00-3:00pm M-R