GROSSMONT COLLEGE

COURSE OUTLINE OF RECORD

Curriculum Committee Approval: 03/22/2022

GCCCD Governing Board Approval: 04/19/2022

CARDIOVASCULAR TECHNOLOGY 115 – INTRODUCTION TO ADULT ECHOCARDIOGRAPHY

1. Course Number Course Title Semester Units

CVTE 115 Introduction to Adult Echocardiography 4

Semester Hours

2 hours lecture: 32-36 hours 64-72 outside-of-class hours

6 hours laboratory: 96-108 hours 192-216 total hours

2. Course Prerequisites

A “C” grade or higher in CVTE 100 and 101 and 102 and 103.

Corequisite

None

Recommended Preparation

None

3. Catalog Description

An introduction to Adult Echocardiography. This course is in specialized techniques and cardiovascular theory to develop cognitive and manipulative skills in the clinical operation of specified ultrasound instrumentation, and in the performance of adult echocardiography.

4. Course Objectives

The student will:

a. Diagram a normal heart and label the chambers, walls, and valves; indicate the normal pressures within each chamber.

b. Identify the normal intracardiac anatomy in each standard 2D echo view.

c. Demonstrate the operation of each of the various echo machines in the lab and use of controls to optimize 2D, color flow, and spectral Doppler displays.

d. Demonstrate and measure flow through each cardiac valve using color flow and spectral Doppler techniques.

e. Grade left and right ventricular systolic function based on qualitative and quantitative data.

f. Assess LV diastolic function based on measurement data and evaluate for signs of elevated filling pressures.

5. Instructional Facilities

a. Standard classroom.

b. Ultrasound classroom laboratory.

6. Special Materials Required of Student

None

7. Course Content

a. Cardiac anatomy, 2D echo anatomy

b. Instrumentation

c. M-Mode

d. Normal values for chamber sizes and function

e. Doppler: Pressures & Flow

f. LV anatomy, physiology, and systolic function

g. Strain/deformation imaging

h. Diastolic function (inflow Doppler, tissue Doppler, LA size)

i. RV anatomy, physiology, and systolic function

j. End systole and end diastole dimensions and volumes

k. Diastolic function Doppler, LA volumes

8. Method of Instruction

a. Lecture.

b. Class discussion such as case review using topical real-world cases.

c. Multimedia presentations.

d. Demonstration of skills followed by guided practice using student models for live scanning.

e. Timely feedback from instructor(s).

9. Methods of Evaluating Student Performance

a. Written exams based on lecture content such as cardiac anatomy and physiology.

b. Quizzes based on lecture content such as diastolic function.

c. Competency-based performance lab exams.

d. Comprehensive written final exam.

e. Homework assignments using online resource to guide measuring echocardiographic images.

10. Outside Class Assignments

a.Assigned readings from texts, professional journals, and material provided by the instructors.

b. Assignments using online measuring and reporting tools.

c**.** Attend local echo society meetings and provide a written synopsis.

d. Prepare a poster that describes a specific chosen/assigned disease involving the cardiovascular system.

e. Students will create a reference “pocket-guide” for their own use when scanning.

11. Representative Texts

a. Representative text(s):

1) Anderson, Bonita. *A Sonographer's Guide to the Assessment of Heart Disease*. MGA Graphics. 2013.

2) Anderson, Bonita*. Echocardiography: The Normal Examination and Echocardiographic Measurements*. Cardiotext Pub. 2017.

b. Supplementary texts and workbooks:

3-semester online subscription to "Echo Test & Teach"

Addendum: Student Learning Outcomes

Upon completion of this course, our students will be able to do the following:

a. Demonstrate professional, safe, and hygienic practices when using the equipment and working with patients.

b. Obtain, optimize, and record standard parasternal and apical views, following a standardized protocol.

c. Recognize normal and abnormal cardiac systolic and diastolic function and hemodynamics as measured by echocardiography.

d. Evaluate measurements and calculations of linear, volumetric, and flow parameters to determine if the measurements are accurate and if chamber size and function are within normal limits.