

DMS 52B: PHYSICAL PRINCIPLES OF DIAGNOSTIC MEDICAL SONOGRAPHY II

Foothill College Course Outline of Record

Heading	Value
Units:	2
Hours:	2 lecture per week (24 total per quarter)
Prerequisite:	DMS 52A.
Degree & Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	CSU
Grade Type:	Letter Grade Only
Repeatability:	Not Repeatable

Student Learning Outcomes

- Identify the various types of transducers and describe the differences.
- Identify the components of the image display.

Description

A continuation of DMS 52A with an emphasis on transducer types, 2-D imaging, pulse echo instrumentation, image processing, dynamic range as well as harmonic imaging. Intended for students in the Diagnostic Medical Sonography Program; enrollment is limited to students accepted in the program.

Course Objectives

The student will be able to:

- Identify the various types of transducers and describe the differences.
- Explain the principles of pulsed waves.
- Identify the differences between two-dimensional imaging and other types of imaging.
- Identify the components of the image display.
- Explain the fundamentals of harmonic imaging.
- Explain the basics of hemodynamics as interrogated by doppler ultrasound.

Course Content

- Transducers.
 - Transducer construction
 - Transducer properties
 - Transducer types
- Principles of pulsed sound waves.
 - Sound beam anatomy
 - Lateral resolution
- Two-dimensional imaging.
 - 2-D imaging and other types of imaging.
 - Various transducer types to create the 2-D image.
- Pulsed echo instrumentation and components of image display.
 - Receiver functions
 - Electrical interaction
 - Reconstruction of the image

- Sender/receiver interfaces
- Care and cleaning of transducers
- Storage of transducers
- Real time imaging.
 - Dynamic range
 - Harmonic imaging
 - Matrix of real time imaging
- Contrast materials
- Hemodynamics of doppler ultrasound
- Doppler and doppler ultrasound
- Ultrasound artifacts

Lab Content

Not applicable.

Special Facilities and/or Equipment

A. DVD/TV video system, internet access, computer, slide system, overhead projector, video conferencing.

Method(s) of Evaluation

Methods of Evaluation may include but are not limited to the following:

- Quizzes
- Final exam

Method(s) of Instruction

Methods of Instruction may include but are not limited to the following:

- Lecture presentations
- Classroom discussions
- Homework

Representative Text(s) and Other Materials

Edelman, Sidney. Understanding Ultrasound Physics. 5th ed. Woodlands, TX: ESP, Inc., 2018.

Types and/or Examples of Required Reading, Writing, and Outside of Class Assignments

- Read text assignments as per syllabus - estimated as 20 pages per week.
- Complete written sections on tests.

Discipline(s)

Diagnostic Medical Technology