



BAKER COLLEGE
STUDENT LEARNING OUTCOMES

HSC1810 Acoustical Physics
3 Semester Hours

Student Learning Outcomes & Enabling Objectives

1. Describe sound wave characteristics and properties.
 - a. Analyze the basic ultrasound properties and terminology.
 - b. Distinguish types of sound wave propagation through tissue.
 - c. Describe general principles of metric notation, unit conversion, and measurements.
 2. Explain transducer technology.
 - a. Identify transducer components.
 - b. Determine the advantages and limitations of the various transducers.
 3. Explain the features of medical sonographic equipment.
 - a. Relate operator controls to image processing.
 - b. Explain the Doppler block diagram.
 4. Examine the role of advanced scanning features and artifacts.
 - a. Describe harmonics, coded excitation, and compounding.
 - b. Recognize image artifacts and techniques to minimize or eliminate them.
 5. Explain the principles of the Doppler Effect.
 - a. Describe color, power, and spectral flow imaging.
 - b. Explain the Doppler equation.
 - c. Differentiate pulsed wave Doppler from continuous wave Doppler.
 - d. Explain hemodynamics.
 6. Describe the importance of performance, safety, and output measurements and bioeffect standards.
 - a. Examine sonographic image and Doppler spectral quality, and recognize the importance of preventative maintenance of the ultrasound system.
 - b. Discuss the biological effects associated with the use of medical sonography.
 - c. Relate the As Low as Reasonably Achievable (ALARA) principle.
 - d. Differentiate the various types of imaging phantoms and test objects.
 - e. Explain the importance of quality assurance and test validation.
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These SLOs are not approved for experiential credit.

Effective: Fall 2019