Course Competency

SON 2619C Doppler Principles and Instrumentation

Course Description

This course presents a review of fundamental physi cs and an in-depth study of Doppler Physical Princ iples of Diagnostic Ultrasound. Topics also includ e Doppler Instrumentation, equipment, display syst ems, quality control, and hemodynamics of blood fl ow. Prerequisite: SON 2618C. Laboratory fee. (1 hr . lecture; 2 hr. lab)

Course Competency	Learning Outcomes
Competency 1: The student will demonstrate knowledge and comprehension of how basic principles of physics apply to Doppler by:	1. Communication 2. Numbers / Data 3. Critical thinking 4. Information Literacy 5. Computer / Technology Usage
a. Defining the pulse repetition frequenc Analyzing when to change the pulse repetition frequency. b. Describe the functions of each Doppler control and how it changes the sound pulses being sent and reflected. c. Defining the Doppler shift. d. Describing the spectral trace Doppler and normal velocities and waveforms	
Competency 2: Demonstrate knowledge and comprehension of the hemodynamics of the body by:	1. Communication 2. Critical thinking 3. Information Literacy 4. Computer / Technology Usage
a. Explaining laminar flow and name conditions when it will exist. b. Describe how spectral broadening can occur even in a vessel with laminar flow. c. Differentiate parabolic from flat velocity profiles. d. Name three (3) situations where turbulence will occur.	

Competency 3: Demonstrate knowledge and comprehension of Doppler study performance by:	1. Communication 2. Numbers / Data 3. Critical thinking 4. Information Literacy 5. Computer / Technology Usage
a. Explaining the importance of angle in determining the Doppler shift. b. Indicating what conditions will result in higher or lower velocity of blood flow. c. Stating the modified Bernoulli equation and calculate several pressure gradients. d. Explaining when pressure gradients exist. e. Performing a pressure half-time measurement on a mitral valve flow signal.	
Competency 4: Demonstrate knowledge and comprehension of blood flow patterns by:	1. Communication 2. Numbers / Data 3. Critical thinking 4. Information Literacy 5. Computer / Technology Usage
a. Describing the characteristic flow of the aortic, mitral, tricuspid and pulmonic valves. b. Naming three (3) characteristics of regurgitant jets. c. Calculating the systolic pressure in the RV when given TR signals. d. Relating the severity of AI to the slope of the signal. e. Name four (4) characteristics of stenotic flow.	

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