



Basic Concepts of Diagnostic Ultrasound

Guide for Curriculum Unit 83.07.05
by Beverly Stern

Basic Concepts of Diagnostic Ultrasound explains what ultrasound is, how it is produced and why it is useful in medical imaging. A section on mathematics is included.

Specific Objectives: Using about 15 class periods, the student should be able to do the following. A. Put in writing 1) the ultrasound medical imaging process, 2) the sound frequency range audible to humans and the frequency range used in medical imaging, 3) how ultrasound is produced, and 4) why ultrasound is important in diagnostic medicine. B. Sketch illustrations of A-mode, B-mode, Compound B-mode and M-mode. C. Describe in writing the real-time mode. D. Do requested work in math section including the following: 1) define, illustrate and use the following wave characteristics—frequency, periods, wavelength, propagation speed, amplitude and intensity and 2) apply the distance formula in a variety of car and sound situations.

This unit has slides and a floppy disc in BASIC for Apple II with a program for student practice in using the distance formula with sound and another program to use in classroom demonstration of the speed of sound in different media. There may be available a video tape from the Institute on Diagnostic Imaging in which there is a section on real-time diagnostic ultrasound scanning.

(Recommended for 9th through 12th grade Basic or General Math and General Science)

Key Words

Teaching Medical Imaging Mathematics Ultrasound Technology Tomography

<https://teachersinstitute.yale.edu>

©2019 by the Yale-New Haven Teachers Institute, Yale University
For terms of use visit <https://teachersinstitute.yale.edu/terms>