

**Course Objectives/Course Outline**  
**Spokane Community College**

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**Course Title:** Ultrasound Physics and Instrumentation I  
**Prefix and Course Number:** ECHO 125

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**Course Learning Outcomes:**

**By the end of this course, a student should be able to:**

This course emphasizes ultrasound physics, the physics of waves, sound transmission, attenuation, pulse wave principles, transducer and ultrasound systems operations. This course and its companion course, Sono 135 are designed to provide the foundation for diagnostic medical sonography imaging procedures and the ability to obtain a passing score on the American Registry of Diagnostic Medical Sonography physical principles and instrumentation examinations. Laboratory experiences are provided.

Apply mathematic concepts in the evaluation of ultrasound and its transmission though human soft tissue.

- Describe ultrasound waves in their transmission propagation, characteristics and parameters.
- Describe ultrasound waves in their attenuation and effects on imaging human tissue.
- Describe the use for pulse wave parameters and applications within ultrasound imaging
- Identify the various characteristics of ultrasound transducers and their effects on ultrasound images.
- Apply the physical principles of ultrasound in the operation of medical sonographic equipment.

***COURSE OUTLINE***

- I. Mathematic concepts utilized in ultrasound physics
- II. Ultrasound waves
- III. Attenuation of ultrasound waves
- IV. Pulsed wave operations
- V. Ultrasound transducers
- VI. Ultrasound system operation