

**El Paso Community College**  
**Syllabus**  
**Part II**  
**Official Course Description**

<b>SUBJECT AREA</b>	<u><b>Diagnostic Medical Sonography</b></u>
<b>COURSE RUBRIC AND NUMBER</b>	<u><b>DMSO 2101</b></u>
<b>COURSE TITLE</b>	<u><b>Ultrasound Instrumentation</b></u>
<b>COURSE CREDIT HOURS</b>	<u><b>1            1    :    0</b></u> <b>Credits            Lec            Lab</b>

**I.      Catalog Description**

Studies fundamentals of pulse-echo ultrasound system. Includes components and function display system, scan converter, and hard copy units. Emphasizes Doppler production and display safety, and performance issues. A grade of "C" or better is required in this course to take the next course. **(1:0)**.

**II.     Course Objectives**

Upon satisfactory completion of this course, the student will be able to:

- A.      Unit I.   Pulsed Echo and Associated Math
1.      Defined pulsed waves
  2.      Define pulse wave ultrasound terms
  3.      Define frame rate
  4.      Define pulse duration
  5.      Define duty cycle
  6.      Define Intensities
  7.      Define beam uniformity coefficient
  8.      Define bandwidth
  9.      Demonstrate formulas of associated math
  10.     Perform unit conversions
  11.     Understand proportional relationships
  12.     Understand units of the metric system
- B.      Unit II.   System Operation
1.      Explain how an ultrasound system works
  2.      Describe receiver functions
  3.      Describe scan conversion
  4.      Describe video display
  5.      Describe transducer functions
  6.      Understand maximum imaging depth
  7.      Understand multiple transmit foci
  8.      Understand resolution
  9.      Differentiate types of ultrasound modes

C. Unit III. Doppler

1. Define Doppler effect
2. Demonstrate Doppler equation
3. Understand how Doppler is done
4. Differentiate frequency and amplitude
5. Differentiate PW from CW ultrasound
6. Describe PW ambiguity
7. Understand HPRF Doppler
8. Perform correct color Doppler technique
9. Perform correct spectral Doppler technique

**III. THECB Learning Outcomes (WECM)**

1. Discuss pulse-echo principles and controls on the ultrasound equipment to produce sonographic images.
2. Record static and dynamic images.
3. Interpret methods of Doppler flow analysis.
4. Discuss bioeffects and quality assurance.

**IV. Evaluation**

A. Methods:

1. Homework and Quizzes  
Written homework assignments will be given periodically; late assignments will not be accepted. Additionally, unannounced quizzes will be given during class time to assess comprehension and application of course objectives. Absence during a quiz can not be made up. A quiz missed or homework not turned in due to an unexcused absence will result in a grade of zero.
2. Unit Examinations  
Unit examinations will be administered at the end of a specified unit or units to assess master of course objectives. All exams are written and consist of multiple choice, true/false, matching, essay, or a combination of the preceding. An exam missed because of an excused absence must be made up on the day that the student returns to class. An exam missed because of an unexcused absence can not be taken and the student will receive a grade of zero (0) for that exam.
3. Comprehensive Final Examination  
This examination is given to assess your mastery of the course objectives.

B. Grading Scale:

100 – 92	= A
91 – 83	= B
82 – 75	= C
74 – 67	= D
66 – 0	= F

A total final course grade of below C (i.e., less than 75%) is **not** acceptable for completion of professional (DMSO) courses. Any grade of .5 or greater will be rounded off to the next whole number and any grade less than .5 will be rounded to the next lower whole number.

C. Final Grade Determination

Homework and Quizzes	20% toward final grade
Unit Examinations	55% toward final grade
<u>Comprehensive Final Examination</u>	<u>25%</u> toward final grade
TOTAL	100%

D. Remediation

Your progress in the class will be discussed with you periodically to review areas of concern or improvement. You should understand that failure to achieve a combined course average of at least 75% will prevent your continuation in the Ultrasound program; therefore, any problem regarding course content that you are concerned about should be addressed to me as soon as possible.

E. Attendance

Attendance in class is required to best assimilate the lecture and textbook material. Frequent absences are discouraged.

F. Tardiness

You are tardy when you are more than 10 minutes late from class. Consistent tardiness is disruptive to the class and you may not be allowed into the class should this continue.

**V. Disability Statement (Americans with Disabilities Act [ADA])**

EPCC offers a variety of services to persons with documented sensory, mental, physical, or temporary disabling conditions to promote success in classes. If you have a disability and believe you may need services, you are encouraged to contact the Center for Students with Disabilities to discuss your needs with a counselor. All discussions and documentation are kept confidential. Offices located: VV Rm C-112 (831-2426); TM Rm 1400 (831-5808); RG Rm B-201 (831-4198); NWC Rm M-54 (831-8815); and MDP Rm A-125 (831-7024).

**VI. 6 Drop Rule**

Students who began attending Texas public institutions of higher education for the first time during the Fall 2007 semester or later are subject to a 6-Drop limit for all undergraduate classes. Developmental, ESL, Dual Credit and Early College High School classes are exempt from this rule. All students should consult with their instructor before dropping a class. Academic assistance is available. Students are encouraged to see Counseling Services if dropping because exemptions may apply. Refer to the EPCC catalog and website for additional information.