MASTER SYLLABUS

COURSE NUMBER AND TITLE:

RAD 389B-2, Ultrasound Physics & Instrumentation

COURSE DESCRIPTION:
A continuation of the study of diagnostic medical ultrasound physics and introduction to vascular ultrasound. Topics include ultrasound wave generation and propagation; transducers; pulse echo instruments; pulse echo imaging; image storage and display; Doppler; artifacts; quality assurance; bioeffects and safety. Restricted to major or consent of school. Students must receive a grade of "C" or higher to advance within the Sonography Program.

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

1. Explain the basic principles of ultrasound.
2. Describe propagation of ultrasound through tissues and identify variances of propagation.
3. List and describe the various components of transducers.
4. List and describe the various components of pulse echo instrumentation.
5. Explain the principles of pulse echo imaging.
6. Explain acquisition, storage and display of ultrasound images.
7. Explain basic Doppler physical principles and instrumentation.
8. List and describe imaging artifacts.
9. Identify components related to patient care, safety, and communication.

COURSE OUTLINE:	**PERCENTAGE:**
1. Basic Principles & Wave Analysis	5%
2. Propagation of Acoustic Waves through Tissue	10%
3. Sonographic Transducers & Sound Beams	20%
4. Principles of Pulse Echo Imaging	15%
6. Sonographic Instrumentation	15%
7. Artifacts	10%
8. Patient Care, Safety, and Communication	5%

MEANS OF STUDENT EVALUATION:

• Unit Tests	35%
• Final Exam	40%
• Quizzes & Assignments	25%
	100%

Grading Scale

93 - 100 = A
85 - 92 = B
77 - 84 = C
70 - 76 = D
0 - 69 = F

PREREQUISITES: Instructor approval.

TEXTBOOK:
Edelman, S. (2012) Understanding Ultrasound Physics 4th ed, Woodlands, Texas ESP,INC.