醫用超音波原理

(921 U2000)

Instructor:李百祺(博理館 425 室, E-mail: paichi@cc.ee.ntu.edu.tw)Time:週三 9:10am-12:10pmPlace:博理館 103

Objective: Introduce basic principles of diagnostic ultrasound imaging systems. Clinical applications, design considerations and recent progress in the ultrasound industry will also be discussed.

<u>Textbook</u>: Class notes. Related materials will be distributed when appropriate.

Prerequisites: Signals and Systems, Probability, or consent of instructor.

Topics:

- 1. Overview of Diagnostic Ultrasonic Imaging Systems.
- 2. Acoustic Wave Propagation.
- 3. Scattering, Attenuation and Speckle.
- 4. Transducers Generation and Detection of Ultrasound.
- 5. Diffraction and Beam Formation Using Arrays.
- 6. Real-Time Image Formation.
- 7. Contrast Resolution.
- 8. Color and Spectral Doppler.
- 9. Doppler Ambiguity Function.
- 10. Exposimetry.
- 11. Emerging Technologies and Trends in Industry.
- Grading: 30% Computer Homework 25% Written Exam 1 25% Written Exam 2 20% Term Report

*Class notes available at <u>http://ultrasound.ee.ntu.edu.tw/course1.htm</u>.