

EEL 6935 Medical Imaging

Credits: 3 credits

Textbook, Title, Author, and Year: Medical Imaging Signals and Systems by J.L. Price and J. Links (Prentice Hall, 2005)

Reference Materials: N/A

Specific Course Information

Catalog Description: Provide students of engineering and science with an introduction to the physical and signal-processing bases of modern medical imaging systems.

Prerequisites: Graduate standing in engineering or physics

Specific Goals for the Course: Introduce the student to underlying physics and signal processing aspects of projection radiography, x-ray tomography (CT), planar scintigraphy, emission-computed tomography (SPECT and PET), ultrasound imaging, and magnetic resonance imaging (MRI). Additional lectures may be given on new biomedical optical imaging methods.

Brief List of Topics to be covered:

1. Basic Imaging Principles
2. Signals and Systems
3. Image Quality
4. Physics of Radiography
5. Projection Radiography
6. Computed Tomography
7. The Physics of Nuclear Medicine
8. Planar Scintigraphy
9. Emission Computed Tomography (SPECT, PET)
10. The Physics of Ultrasound
11. Ultrasound Imaging Systems
12. Physics of Magnetic Resonance
13. Magnetic Resonance Imaging