Preliminary Syllabus

Week 1
Thursday   9/22   Course Policies, Overview of Imaging Modalities, Introduction to MRI

Week 2
Tuesday   9/27   MRI: Overview, Basic physics, Bloch Equation
Thursday   9/29   MRI: Gradients, Signal Equation, Spin-warp pulse sequence
Week 3
Tuesday   10/4   Fourier Transforms: Overview and basic properties
Thursday   10/6   Linear systems, 1D and 2D convolution
Week 4
Tuesday   10/11   Fourier Transforms and Convolution, Duality, Windowing, Resolution.
Thursday   10/13   Sampling: 1D and 2D sampling, Whitaker-Shannon sampling theorem, aliasing

Week 5
Tuesday   10/18   Sampling Continued, Discrete Fourier Transform
Thursday   10/20   MRI: Resolution and sampling requirements, slice selection, image contrast;

Week 6
Tuesday   10/25   Noise and SNR
Thursday   10/27   MRI: Applications

Week 7
Tuesday   11/1   Special Topic: TBD
Thursday   11/3   X-rays

Week 8
Tuesday   11/8   CT: Overview and basic Physics, Radon transform
Thursday   11/10   CT: Filtered back projection, noise considerations

Week 9
Tuesday   11/15   Ultrasound: Overview and basic physics
Thursday   11/17   Ultrasound: Beam formation, Scanning modes

Week 10
Tuesday   11/22   Ultrasound: Phased Array systems, Doppler
Thursday   11/24   NO CLASS. Thanksgiving Holiday

Week 11
Tuesday   11/29   Nuclear Imaging
Thursday   12/1   Special Topic: TBD