### 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