Revised Syllabus

Week 1
Monday 9/30   Course Policies; Overview of Imaging Modalities
Wednesday 10/2   X-rays: Basic Physics; Contrast; Source and object magnification.

Week 2
Monday 10/7   X-ray imaging solution; Delta functions and signal expansions; impulse
                                response.
Wednesday 10/9   Review Signal Expansions; Linearity; Superposition; Shift Invariance;
                                Convolution

Week 3
Monday 10/14   X-ray imaging equation; Begin CT;
Wednesday 10/16   Radon Transform; Backprojection; Begin Fourier Transforms;

Week 4
Monday 10/21   Fourier Transform theorems; Modulation Transfer Function.
Wednesday 10/23   Convolution Theorem; CT: Projection Slice Theorem;

Week 5
Monday 10/28   Filtered back projection; Sampling: 1D and 2D sampling, Whitaker-Shannon
                                sampling theorem, aliasing; Application to CT
Wednesday 10/30   MRI: Overview, Basic physics, Bloch Equation

Week 6
Monday 11/04   MRI: Gradients, Signal Equation, Spin-warp pulse sequence
Wednesday 11/06   MRI: Sampling and Windowing; Pulse sequence Design

Week 7
Monday 11/11   **NO CLASS; Veteran's Day Holiday**
Wednesday 11/13   MRI: Slice selection; RF pulse design

Week 8
Monday 11/18   In-class Exam
Wednesday 11/20   MR Image Contrast and Pulse Sequence Parameters

Week 9
Monday 11/25   Diffusion Imaging [L. Frank]
Wednesday 11/27   Imaging of Flow and Motion; Cardiac Imaging [E. Wong]

Week 10
Monday 12/02   Functional Brain Imaging [R. Buxton]
Wednesday 12/04   Imaging of Brain Connectivity

Week 11
Finals Week   Project Presentations from 11:30 am to 2:30 pm
Tuesday 12/10