

Medical Physics / BME 710, Advances in Magnetic Resonance Imaging
Tentative Class Schedule for Fall 2018

	Date	Day	Lecture	Week	Topic	suitable for journal club	Homeworks posted (8 total)	Homeworks due date	Project
MR Fundament	6-Sep	Thu	1	1	Course Overview + MR Hardware				
	11-Sep	Tue	2	2	MR Hardware				
	13-Sep	Thu	3		MR Signal, Relaxation, Bloch Equations		1: MR Fundamentals 1		
	18-Sep	Tue	4	3	RF Coils (including RF lab demo)				
	20-Sep	Thu	5		Echoes, Signal localization		2: MR Fundamentals 2		
	25-Sep	Tue	6	4	Pulse Sequences	yes		HW 1	
Image Reconstruction	27-Sep	Thu	7		k-space	yes	3: Image Reconstruction		
	2-Oct	Tue	8	5	Quantitative MRI	yes		HW 2	
	4-Oct	Thu	9		Scanner Demo - Animal Scanner				
	9-Oct	Tue	10	5	Parallel MRI	yes	4: T1 and T2 relaxation		
	11-Oct	Thu	11		Non-Cartesian Trajectories: Data Acquisition and Reconstruction	yes		HW 3	
	16-Oct	Tue	12	7	Constrained Reconstruction / Compressed Sensing	yes			
	18-Oct	Thu	13		SNR: Considerations and Measurements	yes	5: Parallel MRI		
	23-Oct	Tue	14	8	Scanner Demo - Human Scanner			HW 4	
	25-Oct	Thu	15		BOLD signal and functional MRI	yes			
	30-Oct	Tue	16	9	Phase in MRI 1: Phase Contrast (Velocity) & MR Elastography	yes	6: Constrained Reconstruction		proposal due date
MR Applications	1-Nov	Thu	17		Phase in MRI 2: Fat/water imaging	yes		HW 5	
	6-Nov	Tue	18	10	Cardiac MRI: cardiac and respiratory gating, segmented k-space, sequences	yes			
	8-Nov	Thu	19		BOLD signal and functional MRI	yes	7: Phase in MRI		
	13-Nov	Tue	20	11	Perfusion MRI - Contrast-enhanced and arterial spin labeling (ASL)	yes		HW 6	
	15-Nov	Thu	21		Diffusion MRI	yes			
	20-Nov	Tue	22	12	Pet / MRI	yes			
	22-Nov	Thu			Thanksgiving recess - no class			HW 7	
	27-Nov	Tue	23	13	Hyperpolarization	yes			
	29-Nov	Thu	24		MR Spectroscopy	yes			
	4-Dec	Tue	25	14	Trip to GE Healthcare				
	6-Dec	Thu	26		Project Presentations 1				
	11-Dec	Tue	27	15	Project Presentations 2 - last class				presentation
	16-Dec	Sun			Report is due		8: Project Report Critique		
	18-Dec	Tue			Critique of project report due			HW 8	project report due

as of 09/06/2018