

HARVARD MEDICAL SCHOOL JOINT PROGRAM IN NUCLEAR MEDICINE

COURSE OUTLINE 2008/2009

Course Title: Image Processing

**Course Instructor(s)
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Objective(s): The trainees will learn fundamental computer imaging concepts, including how image data may be encoded and stored in computers, how images are reconstructed to form 3-D images, how 3-D image data may be displayed, and manipulated for presentation to the human observer or for quantitative analysis, and how images from multiple modalities may be spatially registered.

Criteria for Successful Completion of This Course

- a) Good attendance and classroom participation (80% minimum)
- b) Passing grade on final exam (60% minimum)

Textbook: Image Reconstruction in Radiology, J.A. Parker (1990)

Lecture Location(s): Crosstown Center (801 Mass. Ave, 5th Floor Main Conference Rm)
BIDMC (Nuclear Medicine Conference Room)
CHB (Nuclear Medicine Consultation Room 2)
DFCI
BWH (Sack Conference Room or other as noted)

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Course Schedule

Time: 8:00 – 9:00 AM

Day	Date	Location	Topic	Instructor	Reading/Assignment
Fri	9/5	BWH Sack Conf Rm.	Math Review	S.C. Moore	Chapter 2
Mon	9/8	Crosstown	Convolutions and Point- Spread Functions	S.C. Moore	Chapter 3
Fri	9/12	BWH Sack Conf Rm.	Fourier Transforms	S.C. Moore	Chapters 14 & 16
Mon	9/14	BWH Sack Conf Rm.	Using the ImageJ Program	R.E. Zimmerman	
Fri	9/19	BIDMC	Photoshop	J.A. Parker	
Mon	9/22	BIDMC	Volume Rendering	J.A. Parker	
Fri	9/26	BIDMC	Manual Image Registration	J.A. Parker	
Mon	9/29	BIDMC	Deconvolution and Qp:Qs	J.A. Parker	
Fri	10/3	BWH Sack Conf Rm.	Filtering and Sampling	S.C. Moore	Chapters 22 & 23
Mon	10/6	DFCI	Tomographic Reconstruction	D.J. deVries	
Fri	10/10	BWH Sack Conf Rm.	Iterative Reconstruction	S.C. Moore	
Mon	10/13		Columbus Day – No Class		
Fri	10/17	CHB	PET Data in 2D and 3D	F.H. Fahey	
Mon	10/20	BWH Sack Conf Rm.	Image Segmentation	M-A Park	
Fri	10/24		TBA		
Mon	10/27	BIDMC Reading Rm	Computer Demo: Image Reconstruction	Jeff English, CNMT	
Fri	10/31	BWH Sack Conf Rm.	Lesion Detection	S.C. Moore	
Thu	11/6	BWH Sack Conf Rm.	Monte Carlo Techniques	S.C. Moore	
	7:15AM				
Fri	11/7	BWH Sack Conf Rm.	Compartment Analysis	A. Sitek	
Mon	11/10		TBA		