



# GE MR MASTERS SERIES

## PHYSICIANS' MR TRAINING PROGRAM



### Location

University of  
Pittsburgh  
Medical Center  
200 Lothrop Street  
Pittsburgh, PA

### Understanding and Applying Clinical MR Physics With Emanuel Kanal, M.D., FACR, Pittsburgh, PA

Dr. Kanal is a wizard at teaching MR physics to both the technical and non-technical person. His experience is primarily with GE, although he does read from other vendors' equipment. **This five-day course is designed to give the attendee a deeper understanding of the basic physics and contrast mechanisms underlying the MR imaging process and how to apply them to a busy clinical practice.** It also provides a thorough overview of MR angiography, diffusion weighted imaging, perfusion weighted imaging, parallel, multichannel imaging, such as ASSET techniques and literally dozens of other clinical imaging techniques and parameters. Dr. Kanal also utilizes his custom-developed computer program, Kanal's MR Tutor™, a Macintosh-based MR simulator, which is famous throughout the MR education and training community. With this tool, the student can apply "what-if" scenarios to scanning situations and MR images, and observe the effects of parameter changes in real time.

*"One of the best MR 'basics' courses I'm aware of.  
Dr. Kanal makes the technical aspects of MR very  
accessible and understandable."*

*"I wish I could put this course in a bottle and pour it out  
again and again."*



**GE Medical Systems**

[gemedical.com](http://gemedical.com)



## MR Basic Course Program Format

### MONDAY

8:30	Welcome
8:45 – 9:45	Intro to MR Concepts
9:45 – 10:00	<i>BREAK</i>
10:00 – 11:00	T1, T2, RPD – Part 1
11:00 – 12:00	T1, T2, RPD, TR, TE – Part 2
<b>12:00 – 1:00</b>	<b>LUNCH</b>
1:00 – 2:30	T1, T2, RPD <u>Tutor</u> – Part 2 cont.
2:30-2:45	<i>BREAK</i>
2:45 – 4:30	T2, T2*, 180° Pulse
4:30-5:30	Spatial Localization
5:30	Adjournment

### TUESDAY

8:30 – 10:30	Spatial Localization & Gradients
10:30 – 10:45	<i>BREAK</i>
10:45 – 12:00	Bandwidth & Chemical Shift
<b>12:00 – 1:00</b>	<b>LUNCH</b>
1:00 – 2:30	Intro to Pulse Sequences
2:30 – 2:45	<i>BREAK</i>
2:45 – 5:00	Pulse Sequences
5:00	Adjournment

### WEDNESDAY

8:30 – 9:45	Gradient Echo
9:45 – 10:00	<i>BREAK</i>
10:00 – 11:00	Modified Flip Angle
11:00 – 12:00	Contrast Agents
<b>12:00 – 1:00</b>	<b>LUNCH</b>
1:00 – 2:00	Contrast Agents - Normal Enhancement
2:00 – 2:15	<i>BREAK</i>
2:15 – 4:00	Diffusion Weighted Imaging/Perfusion Weighted Imaging
4:00 – 5:00	SNR
5:00	Adjournment

### THURSDAY

8:30 – 10:30	CNR
10:30 – 10:45	<i>BREAK</i>
10:45 – 12:00	MRI Safety Issues
<b>12:00 – 1:00</b>	<b>LUNCH</b>
1:00 – 3:15	Fast Imaging
3:15 – 3:30	<i>BREAK</i>
3:30 – 5:00	Computer Based MR Tutor Review
5:00	Adjournment

### FRIDAY

8:30 – 9:45	Magnetic Transfer/MRA – Part 1
9:45-10:00	<i>BREAK</i>
10:00 – 12:00	MRA – Part 2 & 3
12:00	Adjournment

*Schedule Subject to Change*