

**fMRI Image Acquisition and Analyses Course**  
**Nov 18th-20th, 2010**

Course Faculty: Kent A. Kiehl, Ph.D.,  
The Mind Research Network and the University of New Mexico  
Vince D. Calhoun, Ph.D.,  
The Mind Research Network and the University of New Mexico  
Tor Wager, Ph.D., University of Colorado – Boulder

<b>Day 1: Nov 18, 2010</b>				
	Start	Duration		
Lect 1.1	8:00 am	0:30	Course Introduction	Kiehl, Calhoun, Wager
	8:30 am	1:00	Tour of MRI + acquisition of data; stimulus presentation; behavioral monitoring; signal acquisition	Kiehl
	9:30 am	0:30	Coffee Break	
Lect 1.2	10:00 am	1:00	fMRI pulse sequences, reconstruction; basic physics	Calhoun
	11:00 am	1:00	SPM and Toolbox install – computer check	Wager
	12:00 pm	0:30	Lunch (provided)	
Lect 1.3	12:30 pm	1:00	Intro to SPM; Data checking; Reorienting data	Kiehl
Lect 1.4	1:30 pm	1:00	Spatial Preprocessing: Realignment/ Slice Timing/ Unwarp/	Kiehl
	2:30 pm	0:30	Coffee Break	
Lect 1.5	3:00 pm	1:00	Spatial Preprocessing: Coregistration/ Spatial Normalization	Kiehl
Lect 1.6	4:00 pm	0:30	Spatial Smoothing	Kiehl
Lect 1.7	4:30 pm	1:00	General Linear Model I- Principles and fMRI	Wager
	5:30 pm	0:30	Question/answer	Kiehl, Wager, Calhoun
	6:00 pm		Adjourn	
	<b>7:00 pm</b>		<b>Social Outing – Elephant Bar</b>	

**Day 2: Nov 19th, 2010**

	Start	Duration		
	8:00 am	1:00	Review from Day 1 question and answer	Kiehl, Calhoun, Wager
Lect 2.1	9:00 am	1:00	General Linear Model II: Basis sets, autocorrelation, and filtering for fMRI	Wager
	10:00 am	0:30	Coffee	
Lect 2.2	10:30 am	1:00	SPM GUI for Single Subject stats/explore design/scaling	Kiehl
	11:30 am	0:30	Lunch (provided)	
Lect 2.3	12:00 pm	1:00	General Linear Model III: Contrasts	Wager
Lect 2.4	1:00 pm	1:00	SPM Results: Single subjects; plotting; display	Kiehl
	2:00 pm	0:30	Break; Coffee	
Lect 2.5	2:30 pm	1:00	Intro to connectivity and mediation	Wager
Lect 2.6	3:30 pm	1:30	Introduction to Independent Component Analysis	Calhoun
	5:00 pm	1:00	Question/answer	Kiehl, Calhoun, Wager
	6:00 pm		Adjourn	

**Day 3: Nov 20th, 2010**

	Start	Duration		
	8:00 am	0:30	Review of Days 1-2	Kiehl, Calhoun, Wager
Lect 3.1	8:30 am	1:00	Experimental Design – Blocked and event-related designs and efficiency	Wager
Lect 3.2	9:30 am	1:00	Group analysis: Fixed, random, and mixed effects	Wager
	10:30 am	0:30	Coffee Break	
Lect 3.3	11:00 am	1:00	SPM results – group subjects; plotting; display; small volume correction	Kiehl
	12:00 pm	:30	Lunch (provided)	
	12:30 pm	1:00	Group analysis: Thresholding and inference	Wager
Lect 3.4	1:30 pm	1:00	Independent Component Analyses II: fMRI	Calhoun
	2:30 pm	:30	Coffee Break	
Lect 3.5	3:00 pm	2:00	ICA of fMRI: Implementation	Calhoun, Kiehl
	5:00 pm	1:00	Review & Final Q and A	Kiehl, Calhoun, Wager
	6:00		Adjourn	