

Structural and Functional Connectivity via MRI

Mon-Fri November 04 - 08, 2024 [Each day 9:00 - 18:00, (EDT GMT -4)]

All classes will be in-person. There may be one or two lectures delivered via zoom.

In general, the class room will be available one half-hour beforehand, at 8:30am, and at least one faculty member will be there.

Slides and other material are available at the Thinkific site for this course for registered participants.

Day 1

9:00 - 9:30	Welcome and Overview	Robert Savoy
9:45 - 11:00	Multivariate Analysis and Connectivity	Robert Savoy
11:15 - 12:30	Quick Review of Basics of NMR and MRI; Sources of Signal and Contrasts: BOLD Contrast, Diffusion Imaging Contrast; Safety, HRC/IRB Considerations	Robert Savoy
12:30 - 1:00	Participant Introductions	Program Participants
1:00 - 2:00	<i>Lunch</i>	
2:00 - 3:00	White Matter Anatomy	Anastasia Yendiki
3:00 - 5:00	Clinical Applications of Resting State Functional Connectivity MRI (Part 1)	Michael Fox
5:00 - 6:00	Discussion	Robert Savoy or Other Faculty

Day 2

9:00 - 12:00	The Many Methods for Analyzing Resting State and Related fMRI data	Alfonso Nieto-Castañón
12:00 - 1:00	<i>Lunch</i>	
1:00 - 2:00	Demonstration of the “conn” Toolbox.**	Alfonso Nieto-Castañón
2:15 - 3:15	<i>Other rs-fMRI related presentation</i>	Faculty
4:00 - 5:00	Evidence of Cerebellar Dysfunction in Neuropsychiatric Disease	Sheeba Arnold Anteraper
5:00 - 6:00	Discussion	Faculty

Day 3

9:00 - 12:00	Diffusion MRI & Tractography*	Anastasia Yendiki
12:00 - 1:00	<i>Lunch</i>	
1:00 - 2:00	Clinical Applications (Part 3): Neurodegenerative Diseases	Bradford Dickerson
2:15 - 3:15	Demonstration of Diffusion and Tractography Software*	Anastasia Yendiki
3:30 - 4:30	Validation for Diffusion Tractography and Clinical Applications	Anastasia Yendiki
4:30 - 5:30	Discussion	Faculty

Day 4

9:00 - 10:00	CONNECTOME 2.0 Scanner at Martinos: Lectures	Susie Huang and Faculty
9:00 - 9:20	Biophysical modeling using diffusion MRI	Hong-Hsi Lee
9:20 - 9:40	The Connectome MRI system: Benefits of high gradient strengths for diffusion MRI	Susie Huang
9:40 - 10:00	Bridging Macro-, Meso-, and Micro-Scales of Connectome Imaging	Gabriel Ramos-Llorden
10:00 - 12:00	CONNECTOME 2.0 Scanner at Martinos: Tours and Demonstrations	Susie Huang and Faculty
10:00 - 11:00	Tour and Demonstration Acquisition	Susie Huang, Hong-Hsi Lee & Gabriel Ramos-Llorden
11:00 - 12:00	Data Processing	Hansol Lee and Yixin Ma
12:00 - 1:00	<i>Lunch</i>	
1:00 - 4:00	Workshop: TMS and related brain stimulation technologies	Aapo Nummenmaa and Faculty
	Overview of TMS technologies – physics, instrumentation, physiology	Aapo Nummenmaa
	Targeting of networks and multifocal TMS	Mohammad Daneshzand
	TMS+EEG and structural connectivity	Tommi Raij
	TMS+fMRI and functional connectivity	Lucia Navarro de Lara
4:15 - 5:30	Clinical Experiences with the First CONNECTOME Scanner	Susie Huang
5:30 - 6:00	Discussion	Faculty

Day 5

9:00 - 12:00	Workshop: Combining fMRI-Based Modalities	Susan Whitfield-Gabrieli
9:00 - 12:00	Wide-ranging presentation of Clinical Applications of rs-fMRI; Use of Task-Based Data; Real-Time Feedback and Event-Triggered Tasks	Susan Whitfield-Gabrieli
12:00 - 12:30	<i>Get Lunch and Return to Room for Last Session</i>	
12:30 - 1:30	Discussions including Combined Applications; Grant Writing; and Closing	Faculty
1:30 - 3:30	Extra Time If Needed (probably ending earlier than this)	Robert Savoy