

**Michigan State University**  
**Departments of Statistics and Probability**

SUMMER 2015 SHORT COURSE

9:30am—12:00pm, Tuesday, May 26, June 2, June 9, 2015  
C405 Wells Hall

**Instructor:** Dr. Mark Reimers

*Department of Neuroscience, Michigan State University*

**Course:** Neuroimaging Data Analysis

**Abstract:**

“Neuroimaging Data Analysis” (NDA) is aimed at using imaging, mathematical, and statistical methods for the analysis of neuroimaging data. This NDA short course is motivated by the great need in the analysis of massive, high-dimensional, and complex neuroimaging data, genetic/genomic data, as well as clinical data from various neuroimaging studies. In order to learn how to access and read the data, what are meaningful scientific questions of interest, and what are statistical/mathematical methods typically used in NDA, we have the following schedule:

1. Tuesday (5-26-2015): accessing high-density electrophysiology data from CRCNS, and present issues in pre-processing; and issues in integration of population and individual neuron data. Then
2. Tuesday (6-02-2015): calcium imaging: again reading image files, issues in pre-processing, and current issues in state-space and network analysis.
3. Tuesday (6-09-2015): For the third session we will work on time series of images from voltage-sensitive and glutamate dyes: managing image files, noise, artifacts, and consider issues in mapping regional communication.

Please bring your own laptop with MATLAB to the class since we will work through some exercises during the class.