

# NEPR 208, Intro. to Computational Neuroscience - 1<sup>st</sup> Year Neuroscience Core

April 3 - 21, M W F 1:15 – 3:05

Lectures, Mon. and Wed. are in MSOBX303 on the following dates: 4/3/17, 4/5/17, 4/10/17, 4/12/17, 4/17/17, and 4/19/17

In class discussion sessions are on Fri. HRP T138B on the following dates: 4/7/17, 4/14/17 and 4/21/17

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This module will introduce students to computational and theoretical approaches in neuroscience. Emphasis will be on specific questions and how those questions can be answered with computational methods.

Monday and Wednesday classes will be lecture, and Friday students will work on and discuss problems sets.

## **Week 1, April 3 – 7**

### **Influence of neural mechanisms on neural activity and response properties**

April 3. Influence of mechanisms on neural coding (Baccus)  
Gain modulation, firing rate homeostasis

April 5. Neural oscillations, computational approaches and insights (Huguenard)

April 7. Work on Problem set 1 in class.

## **Week 2, April 10 - 14**

### **Representation of sensory information in the nervous system**

April 10. Neural coding and decoding (Baccus)

April 12. Optimality (Baccus)

April 14. Work on Problem set 2 in class.

## **Week 3, April 17 - 21**

### **Storage and retrieval of information in the nervous system**

April 17. Short and long term plasticity in synapses (Baccus)

April 19. Memory in neural networks (Ganguli)

April 21. Work on Problem set 3 in class.