NEPR 208, Intro. to Computational Neuroscience - 1st Year Neuroscience Core, 2019

April 22 - May 10, M W F 9:45 am – 11:35 am

Lectures are in LKSC209

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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 22 – 26
Influence of neural mechanisms on neural activity and response properties

April 22. Influence of mechanisms on neural coding (Baccus)
Gain modulation, firing rate homeostasis

April 24. Neural oscillations, computational approaches and insights (Huguenard)

April 26. Work on Problem set 1 in class.

Week 2, April 29 – May 3
Storage and retrieval of information in the nervous system

Apr 29. Simple models of synaptic learning and population dynamics (Druckmann)

May 1. Memory in neural networks (Ganguli).

May 3. Work on Problem set 2 in class.

Week 3, May 6 - 10
Representation of sensory information in the nervous system

May 6. Neural coding and decoding (Baccus)

May 8. Adaptation and synaptic plasticity (Baccus)

May 10. Work on Problem set 3 in class.