

NEPR 208, Introduction to Computational Neuroscience

1st Year Neuroscience Core, 2025

April 21st - May 9th, M W F 1:30 PM – 3:20 PM

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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 lectures on Friday students will work on and discuss problems sets.

Website: <https://druckmann-lab.github.io/nepr208>

Week 1, April 21 – 25

April 21. Introduction and the Perceptron model (Druckmann)

April 23. Neural oscillations, computational approaches and insights (Huguenard)

April 25. Work on Problem set 1 in class.

Week 2, April 28 – May 2

April 28. Analysis of single neuron encoding (Druckmann)

April 30. Analysis of population activity (Druckmann)

May 2. Work on Problem set 2 in class.

Week 3, May 5 – May 9

May 5. Adaptation and synaptic plasticity (Baccus)

May 7. The Hopfield model of context dependent memory (Druckmann)

May 9. Work on Problem set 3 in class.