Synaptic Transmission and Plasticity

Graduate class, Current Topics in Behavioral Neuroscience
PSYC 5270-001 (Spring 2020: class 7955,
3 credits, capacity: 10 students).

The class covers a broad range of topics in the area of cell electrophysiology, synaptic transmission, plasticity of synaptic transmission, synaptic plasticity during development and in learning and memory.

The main focus will be on operation of neurons in the cerebral cortex.

The topics will include:
- origin of electric events in neurons: membrane potential, action potentials and postsynaptic potentials
- means of communication between nerve cells: electrical and chemical synapses
- synaptic plasticity: different forms and mechanisms of short-term plasticity and long-term plasticity
  - regulation of synaptic transmission and plasticity by neuromodulators
  - synaptic plasticity in learning and memory
  - synaptic plasticity in development.

We will discuss classical and contemporary papers on these topics. Students are expected to present the papers and to contribute actively to the discussion. As part of the class, an experimental demonstration of electrophysiological properties and synaptic responses of cortical neurons in slices will be offered.

The class is taught as a part of BNS graduate program, however it is suited to students from other graduate programs (e.g. PNB) as well as to advanced undergraduate upperclassmen with basic knowledge about nerve cells and synapses. For undergraduate students, Physiological Psychology or similar class is required.

In **Spring 2020** the class will meet weekly, **Mondays 14:30-17:30 (room BOUS A101A).**

Please contact Maxim Volgushev (maxim.volgushev@uconn.edu) if you have questions and for a permission number.