

Undergraduate Classes Approved for Graduate Credit

Note: These classes may fill up before graduate student registration. Additional information on courses can be found at <https://catalogs.northwestern.edu/tgs/courses-az/neurosci/>.

303 Neuropsychopharmacology

Advanced seminar focusing on molecular mechanisms and aberrations of synaptic signal transduction and drugs that target them.

304 Developmental Neurobiology

Embryology and cellular/molecular mechanisms of nervous system development. Topics include patterning of the early embryo and nervous system, neurogenesis, neuronal differentiation and cell fate specification, axon guidance and wiring of neural circuits, and activity-, experience-, and sex-dependent neurodevelopment.

311 Biophysical Analysis of Neurons for ISP (alternate years)

This course provides an introduction to neurobiology from an electrophysiological perspective, with an emphasis on ion channel biophysics, quantitative electrical properties of neurons, synaptic physiology, and sensory transduction. Its goal is to provide a basis for understanding how information is encoded, transmitted, and decoded in brains, as well as offer an introduction to reading scientific literature.

320 Animal Behavior

Animal behavior from the neuroscience perspective. Neurobiological bases of foraging, communication, migration, predator-prey interactions, mating, and parental care.

325 Neurobiology of Stress, Adversity, and Resilience

This is a writing-intensive course based on class lectures and discussion that draws from primary literature on the neurobiology of stress, stress susceptibility and resilience, to explore biological mechanisms by which adversity can influence mental health and other outcomes.

360 Brain Disorders

Survey of brain disorders such as neurodegenerative diseases, developmental disorders, narcolepsy, and migraine. Trace progress from the laboratory to the clinic, evaluate the state of knowledge and understand future directions. Strongly recommend review of basic genetics and molecular biology.

365 Neurobiology of Prediction

This course examines neurophysiological circuit mechanisms that allow prediction to emerge in brains of (mostly) non-human animals. Topics include probability and variance, anticipation of aversive and rewarding stimuli, temporal and spatial prediction, and how cellular-level studies inform complex questions of human prediction. Registration Requirements: Must be a neuroscience major; sophomore, junior, senior. Request for a permission number must be made to Dr. Indira Raman but will be issued by the neuroscience major.

370 Genetic and Circuit Analysis of Motivated Behavior

Animals are programmed to behave strongly towards activities that satisfy our basic needs and enhance our chances of survival. This includes eating, drinking, sex, and social interaction. Focusing on neurobiology of eating, we will read scientific articles, learn about cutting edge experimental techniques, discuss concepts, and hone oral presentation skills.

377 Sensation and Perception

Analysis of the key concepts underlying the neurobiological mechanisms of vision, hearing, taste, smell, touch, and pain. Neural pathways leading to perception and processing of stimuli will also be discussed.