A. Course Description

Credits: 3

Prerequisites:

BIOL 111 General Biology I AND
BIOL 112 General Biology II AND
STAT 201 Statistics I
OR
BIOL 111 General Biology I AND
BIOL 112 General Biology II AND
MATH 208 Applied Calculus
OR
BIOL 111 General Biology I AND
BIOL 112 General Biology II AND
MATH 211 Calculus II
OR
BIOL 301 Genetics
OR
BIOL 302 Cell Biology and Histology
OR
BIOL 316 Behavioral Ecology
OR
BIOL 322 Comparative Animal Physiology

Lab Hours/ Weeks: Corequisites: None

Lecture Hours/ Week :

MnTC Goals: None

This course will provide a deeper understanding of the physiological properties of the nervous system. We will address the mechanisms underlying electrical activity in neurons, as well as examine the physiology of synapses; the transduction and integration of sensory information; the function of nerve circuits; the trophic and plastic properties of neurons; and the relationship between neuronal activity and behavior. During the semester a few labs will be offered which will apply electrophysiological methods to examine neuronal activity and will include experimental design as well as analysis and presentation of collected data. Throughout the course, we will focus on past and current neurophysiology research and how it contributes to the field of neuroscience. This course is intended as an upper division elective in the Biology Major

B. Course Effective Dates: 01/08/2018 - Present

C. Outline of Major Content Areas:

See Course Description for major content areas.

D. Learning Outcomes (General)
1. Examine neural signals and hypothesize what cellular properties lead to their differences.
2. Assess the function of and construct different theoretical neural networks illustrating their understanding of how neurons work together to process information
3. Critically analyze current literature in the field of neuroscience
4. Formulate a methodology for testing a hypothesis about a behavioral or neural scenario
5. Synthesize information from known scenarios and adapt it to apply to novel situations to determine how to examine a neural or behavioral phenomena.

E. Learning Outcomes (MN Transfer Curriculum)

This contains no goal areas.

G. Special Information

Note: First day attendance required except by instructor permission.