Miami Dade College

Course Description

PSB2041 | Behavioral Neuroscience | 3 credits

This course presents an approach to the study of the biology of human behavior and aims to introduce the field of Biopsychology. It is designed to provide each student with comprehensive exposure to the nervous system and how it governs various behaviors. This is an introduction course that explores how our brains develop, how they work, and how they are changed by life experiences. Topics include neural communication, localization of brain function, neural systems, and control of behavior. Upon completion of the course, the student will have a solid foundation regarding the biological basis of behavior upon which to build on in more advanced courses of study.

Course Competencies:

Competency 1:

The student will explore how the Central Nervous System (CNS) develops, matures and maintains itself by:

- Using scientific terminology appropriately in reference to biology and behavior
- Describing the various methods used to study the biological basis of behavior
- Discussing the structure of neurons and how neural impulses are generated
- Explaining the structure and functioning of synapses
- Demonstrating an application and understanding of neuroplasticity
- Demonstrating an understanding of neurophysiology principles to associate the effects of psychopharmacology on human development and pathological behavior

Learning Outcomes:

- Communication
- Critical thinking
- Cultural / Global Perspective
- Social Responsibility

Competency 2:

The student will demonstrate an understanding of the interdisciplinary nature of neuroscience by:

- Identifying the disciplines that seek to clarify how the nervous system develops, its structure and what it does.
- Discussing the usefulness of biological, cultural, psychological, and social perspective integration to understand the complexity of human behavior.
- Analyzing how biopsychological knowledge can be used to address a wide range of behavioral and physiological problems.
- Recognizing the interconnectedness and reciprocal relationships between cognitive neuroscience, computational neuroscience, social neuroscience, and artificial intelligence (AI).
- Analyzing topics of neuroscience and its application/ implication in economics, education, humanities, and law.

Learning Outcomes:

- Communication
- Numbers / Data
- Critical thinking
- Information Literacy
- Cultural / Global Perspective
- Social Responsibility

Competency 3:
The student will demonstrate an understanding of the human brain and how it functions by:

- Classifying the divisions of the brain and nervous system and describe their functions
- Identifying the major neurotransmitters and discuss the impact of each on behavior.
- Discussing the role of the brain and nervous system in health and disease.
- Applying the principles of biopsychology to better understand behavior.
- Evaluating the impact and assessment of cognitive and neuropsychological disorders due to developmental factors, metabolic conditions, chemical exposure, and traumatic brain injury.
- Demonstrating an understanding of functional biopsychology, neuropsychological basis of cognitive functions, and clinical implications.
- Demonstrating an understanding of the human sensory system to understand the biology of sleep, the role of the visual system, and the functions of sustaining life.
- Demonstrating an understanding of motivation and sexual behavior from a behavioral neuroscience perspective.
- Demonstrating an understanding of memory and learning and other higher cortical functions from a biopsychological perspective.

Learning Outcomes:

- Communication
- Critical thinking
- Cultural / Global Perspective
- Social Responsibility

Competency 4:
The student will examine discipline of neuroscience critically within a larger cultural, socio-historical, and ethical framework by:

- Identifying major theories and the proponents of these perspectives.
- Evaluating the relevance of selected theories to real-world phenomena.
- Synthesizing the correlation between environmental and hereditary influences on various aspects of behavior.
- Looking at a neurodevelopmental process of well-being versus psychopathology.
- Applying the principles of biopsychology to better understand behavior and the conduct of
- one's own life.
- Exploring neurodiversity and inclusion in society and the workplace.

Learning Outcomes:

- Communication
- Numbers / Data
- Critical thinking
- Information Literacy
- Cultural / Global Perspective
- Social Responsibility
- Ethical Issues