

What is Neuroscience?

Students who decide to pursue a career in neuroscience usually have a focused interest in the biological bases of behavior and thought. This academic path is well suited for students who are contemplating professional or mainly research careers in medicine, pharmacology, veterinarian medicine, animal science, neurology, neurobiology, and neuroscience. It is also suitable for those headed into other health-related fields or graduate school in other areas of psychology. As a neuroscience major within Psychology (B.S. in Behavioral Neuroscience), you will take courses in many different departments because, as you explore the neural basis of behavior and prepare to enter the neuroscience research field, you will need to acquire knowledge in the realms of chemistry, biology, psychology, statistics, and even computer science.

What is Neuroscience?

Neuroscience is an extremely large discipline that encompasses the work of a wide variety of scientists with broad research interests. However, all neuroscientists are interested in the brain and how it works. Some neuroscientists (e.g., in biology) are only interested in learning about the basic physiology of the brain and of brain tissue. Biologically oriented neuroscientists might be interested in such questions as: What cellular processes enable neurons to communicate with each other via neurotransmitters? But **neuroscientists within Psychology** are interested in the relationship between the physiological processes that occur in the brain and the behavior of an organism. They are likely to be interested in the biological basis of normal learning and memory as well as psychiatric illness (e.g., depression, drug abuse, schizophrenia). They might also be interested in how the nervous system influences thoughts, emotions, or abnormal behaviors. This focus on the behavior of the entire organism (typically humans) is what is distinctive about neuroscience within a psychology department.

Research Specializations

The three main research specializations within neuroscience are behavioral neuroscience, cognitive neuroscience, and clinical neuroscience. In particular:

Behavioral neuroscience includes a survey of topics related to the biological processes underlying behavior in humans and in animals, including the physiology of neuronal and synaptic transmission, neurochemistry, and neuropharmacology. Selected research topics within the area of behavioral neuroscience typically include motivation, appetite, reward, homeostasis, biological rhythms, addiction, aggression, stress, emotion, and sleep.

Cognitive Neuroscience includes a survey of topics related to the biological processes underlying cognition in humans and in animals, including the physiology of neuronal and synaptic transmission, neurochemistry, and functional neuroanatomy. Selected topics within the area of cognitive neuroscience typically include sensory processing, hearing, vision, learning and memory, attention, motor control, language, hemispheric asymmetry, executive function, and neuroplasticity.

Clinical Neuroscience includes the study of the organization and function of the nervous system as it relates to topics of interest to psychologists, including pain, anxiety, stress, sleep, depression, schizophrenia, aknetic and dysknetic movement disorders, and senile dementia.

For additional information, visit the **KU Psychology Department webpage** at <http://psych.ku.edu>.