Neuroscience

Interdisciplinary Program in Neuroscience
Chair: J. Welsh

Neuroscience is a field devoted to the scientific study of the nervous system, from its molecular/cellular underpinnings to the organization of neural circuits, and the manifestation of this biological/neurochemical machinery as behavioral, physiological and psychological processes. It aims to detail both how the normal system operates and how alterations in function contribute to clinical diseases, such as mental illness, dementia, developmental disorders, neurodegenerative diseases, chronic pain, drug addiction, and the loss of function with aging or neural injury.

Minors

Neuroscience Minor (http://catalog.tamu.edu/undergraduate/interdisciplinary/neuroscience/neuroscience-minor)

Certificates

Neuroscience Certificate (http://catalog.tamu.edu/undergraduate/interdisciplinary/neuroscience/neuroscience-certificate)

Courses

NRSC 277/VIBS 277 Introduction to Neuroscience
Credits 3. 3 Lecture Hours.
Neuroscience from the molecular to system levels; fundamental principles and knowledge of neuroscience; current research information on neuroscience.
Prerequisites: Freshman or sophomore classification and approval of instructor.
Cross Listing: VIBS 277/NRSC 277.

NRSC 289 Special Topics in...
Credits 1 to 4. 1 to 4 Lecture Hours. 0 to 4 Lab Hours.
Selected topics in an identified area of neuroscience. May be repeated for credit.
Prerequisite: Approval of instructor.

NRSC 311/PSYC 311 Psychology of Animal Behavior
Credits 3. 3 Lecture Hours.
Problems, principles, and methods of animal psychology; animal learning, motivation, discriminative processes and abnormal, social and instinctual behaviors.
Prerequisites: PSYC 107; PSYC 301 and PSYC 302 or junior or senior classification.
Cross Listing: PSYC 311/NRSC 311.

NRSC 320/PSYC 320 Sensation-Perception
Credits 3. 3 Lecture Hours.
Review of sensory physiology, sensory and perceptual phenomena and the major perceptual theories; current research in the field.
Prerequisites: PSYC 107; PSYC 301 and PSYC 302 or junior or senior classification.
Cross Listing: PSYC 320/NRSC 320.

NRSC 331/PSYC 331 Social Neuroscience
Credits 3. 3 Lecture Hours.
Integration of biological and psychological explanations of social behavior; recent research and theories in social neuroscience; emotion, motivation, aggression, face processing, empathy, social cognition, and social relationships.
Prerequisites: PSYC 107 or approval of instructor; junior or senior classification.
Cross Listing: PSYC 331/NRSC 331.

NRSC 332/PSYC 332 Neuroscience of Learning and Memory
Credits 3. 3 Lecture Hours.
Brain mechanisms of learning and memory from molecular to behavioral levels; synaptic plasticity, model systems, multiple memory systems, diseases of learning and memory.
Prerequisites: PSYC 107 or approval of instructor; junior or senior classification.
Cross Listing: PSYC 332/NRSC 332.

NRSC 333/PSYC 333 Biology of Psychological Disorders
Credits 3. 3 Lecture Hours.
Neurobiology and clinical explanation of molecular mechanisms underlying psychiatric disorders and their drug treatments; depression and bipolar, anxiety disorders, mood disorders, psychosis and schizophrenia.
Prerequisites: PSYC 107, PSYC 335/NRSC 335 or one year of biology; junior or senior classification.
Cross Listing: PSYC 333/NRSC 333.

NRSC 335/PSYC 335 Physiological Psychology
Credits 3. 3 Lecture Hours.
Physiological bases of sensation, motor functions, emotion, motivation and complex psychological processes.
Prerequisites: 6 hours of biology; PSYC 301 and PSYC 302 or junior or senior classification.
Cross Listing: PSYC 335/NRSC 335.

NRSC 336/PSYC 336 Drugs and Behavior
Credits 3. 3 Lecture Hours.
Physiological, pharmacological and behavioral effects of psychoactive drugs, including short-term and long-term effects of psychoactive drugs, properties of addictive drugs, etiology of addiction, and treatments of drug addiction and withdrawal.
Prerequisites: PSYC 335/NRSC 335 or NRSC 335/PSYC 335; junior or senior classification.
Cross Listing: PSYC 336/NRSC 336.

NRSC 340/PSYC 340 Psychology of Learning
Credits 3. 3 Lecture Hours.
Survey of significant concepts, experimental methods and principles of learning.
Prerequisites: PSYC 107 or INST 301; PSYC 301 and PSYC 302 or junior or senior classification.

NRSC 350/PSYC 350 Science of Mind and Brain
Credits 3. 3 Lecture Hours.
Research in cognitive neuroscience; methodological advances that enable the study of the human brain safely in the laboratory; complex aspects of the mind like emotion, social behavior, and consciousness.
Prerequisite: Junior or senior classification.
Cross Listing: PSYC 350/NRSC 350.
NRSC 360/PSYC 360 Health Psychology and Behavioral Medicine  
**Credits 3. 3 Lecture Hours.**  
Health psychology emphasizing behavioral and lifestyle factors in health and illness, prevention and modification of health-compromising behaviors, health care utilization, and psychological management of chronic disorders and psychological management of chronic disorders and terminal illnesses.  
**Prerequisite:** PSYC 107.  
**Cross Listing:** PSYC 360/NRSC 360.

NRSC 401/VIBS 401 Developmental Neurotoxicology  
**Credits 2. 2 Lecture Hours.**  
Effects of exposure to toxic substances on the developing nervous system; content to include mechanisms of toxicity of substances potentially devastating to the developing nervous system including lead, mercury and other heavy metals, alcohol, nicotine (smoking), pesticides, flame retardants and others.  
**Prerequisite:** Junior or senior classification.  
**Cross Listing:** VIBS 401.

NRSC 407/VIBS 407 Core Ideas in Neuroscience  
**Credit 1. 1 Lecture Hour.**  
General overview of selected core ideas across the full spectrum of neuroscience.  
**Prerequisite:** Junior or senior classification; background in science courses recommended.  
**Cross Listing:** VIBS 407/NRSC 407.

NRSC 434/BIOL 434 Regulatory and Behavioral Neuroscience  
**Credits 3. 3 Lecture Hours.**  
Cell biology and biophysics of neurons; functional organization of the vertebrate nervous system; physiological basis of behavior.  
**Prerequisites:** BIOL 213, BIOL 319, BIOL 388, NRSC 335/PSYC 335 or PSYC 335/NRSC 335.  
**Cross Listing:** BIOL 434/NRSC 434.

NRSC 450/VIBS 450 Mammalian Functional Neuroanatomy  
**Credits 4. 3 Lecture Hours. 2 Lab Hours.**  
Functional morphology of the domestic animal and human brain using gross specimens, microscopic sections, interactive computer-, DVD-, and video-assisted instructional programs supplemented with clinical case studies.  
**Prerequisites:** Junior or senior classification; BIMS, biology, biochemistry, or psychology majors, or neuroscience minors with overall 3.5 TAMU GPA; or approval of instructor.  
**Cross Listing:** VIBS 450/NRSC 450.

NRSC 485 Directed Studies  
**Credits 1 to 3. 1 to 3 Other Hours.**  
Directed readings or research problems in selected areas designed to supplement existing course offerings. Individual report required.  
**Prerequisite:** Approval of instructor.

NRSC 489 Special Topics in...  
**Credits 1 to 4. 1 to 4 Lecture Hours.**  
Selected topics in an identified area of neuroscience. May be repeated for credit.  
**Prerequisite:** Approval of instructor.

NRSC 491 Research  
**Credits 1 to 4. 1 to 4 Other Hours.**  
Research conducted under the direction of a faculty member in neuroscience. May be repeated 3 times for credit.  
**Prerequisites:** Junior or senior classification and approval of instructor.