NEUROSCIENCE

COURSES:

NEUROSCIENCE MAJOR

All students in the major will choose an emphasis: biology, psychology or computer science. Their emphasis will determine what courses they take in the intermediate core as well as their required allied courses. Neuroscience majors may minor in any of the three contributing disciplines other than their department of emphasis. They may not have a double major with any of the three contributing departments.

14-18.5 course units, including:

BIO 1204	Integrated Concepts of Biology: Molecules and Cells
PSY 1004	General Psychology
PSY 2404	Cognitive Neuroscience
CS 2124	Logic and Problem Solving
MATH 1304	Calculus

Intermediate Core (2 Courses)

Biology emphasis:

BIO 1206	Integrated Concepts of Biology: Organisms and Ecosystems
BIO 2042	Biologists' Toolkit

Computer science emphasis

CS 1124	Foundation of Computer Science
CS 2444	Data Structures

Psychology emphasis

PSY 2224	Research Methods
PSY 2234	Statistical Analysis for the Social Sciences

Upper-level Core (4 courses)

BIO 3224	Neurobiology
CS 3444	Mental Organs (or PHIL 3444)
PSY 3304	Biopsychology
NEUR 4044	Capstone in Neuroscience

Plus 3 electives. Examples of electives include Animal Physiology, Machine Intelligence and Behavioral Pharmacology. The neuroscience major with biology emphasis also requires allied courses necessary for training in the health professions.

TRANSYLVANIA UNIVERSITY

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ADM1391-0116

ABOUT THE MAJOR:

What does it mean to be human? How does the brain make us who we are? In Transylvania's neuroscience program, students explore these and other complex questions relating to the functioning of the brain. Neuroscientific approaches contribute to the discussion of major social and political questions, such as how best to educate children, what strategies are most effective in addressing drug abuse and to what extent human nervous systems can or should be integrated with artificial computational systems.

Neuroscience studied within the liberal arts context examines not only how brain function influences behavior, but how the environments in which organisms dwell influence the brain. We examine the brain as a constantly changing organ responsive to influences from genetic factors, personal environment and sociocultural environment. While many of the courses focus on the brain as a living system, the inclusion of computer science courses in the major enables students to explore models of artificial intelligence and to develop appreciation of the role of massive computational analysis in current brain imaging techniques. The upper-level core courses in the major invite students to integrate the biological, behavioral, computational and philosophical approaches to studying nervous system function.

Members of the neuroscience faculty maintain active research programs and welcome students as members of the research teams. Students also have the opportunity to develop and investigate research problems of their own, with neuroscience faculty members serving as mentors.

COURSES OF SPECIAL INTEREST:

Behavioral Pharmacology
Cognitive Neuroscience
Mental Organs
Robotics
Music Cognition
Neurobiology
Logic and Problem Solving
Animal Behavior

INTERNSHIP OPPORTUNITIES:

Research in laboratories at the University of Kentucky
Shadowing health professionals
Working in local health care facilities

POSSIBLE CAREER OPTIONS:

Physician or other health professional
Clinical neuropsychologist
Neuroscience researcher
Speech/language pathologist
Medical psychologist
Bioethicist
Computer technician with brain imaging specialization
Attorney (via joint professional program in law and neuroscience)
Criminal justice system specialist

FACULTY

Meg Upchurch, Program Director
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"All things that humans have created emerge from the workings of the brain. It is a fascinating organ to study. Imagine a computer that can rewire itself each time it has a new experience, that can change the environment around it and that can contemplate its own existence. The human brain can do all that, and more.""

Meg Upchurch, professor of psychology