Neuroscience and Physiology are distinct but overlapping disciplines. Whereas Neuroscience investigates neural substrates of behavior, Physiology studies multiple functions. However, both seek to understand at an integrated level across molecules, cells, tissues, whole organism, and environment.

The workings of our brain and body define us. When problems occur, results can be devastating. According to the National Institutes of Health, neurological and heart disease are two of the largest world health concerns and more than 50 million people in this country endure some problem with the nervous system.

Our graduate sequences in Neuroscience and Physiology provide an exciting and challenging academic environment by combining research excellence with a strong commitment to education. We offer a comprehensive curriculum to graduate students interested in Neuroscience and Physiology. Both M.S. and Ph.D. programs are also tightly integrated into laboratory research.

- M.S. and Ph.D. students take three core courses in neuroscience, physiology and biostatistics, and elective courses in more specific areas of these fields, as well as in related fields, such as cellular and molecular biology, behavior, chemistry and psychology
- The curriculum provides a canonical conceptual foundation for students pursuing master’s and doctoral research in neuroscience and physiology
- Our sequences provide a “cohort” experience for new students, by offering a cohesive curriculum for those students interested in pursuing graduate study in neuroscience and physiology.

For more information, contact Dr. Paul A. Garris (pagarri@ilstu.edu) or visit bio.illinoisstate.edu/graduate and goo.gl/9YTs4X
Neuroscience and Physiology Faculty & Research

Joe Casto, Ph.D.
Behavioral Neuroendocrinology
Physiology of host-parasite interactions, development of sex differences in brain and behavior, and neural mechanisms of motivated social behaviors.

Paul Garris, Ph.D.
Dopamine Neurobiology
Abused drugs, cognitive enhancers, Parkinson’s disease, methamphetamine-induced neurotoxicity, and development of microsensors and instrumentation.

Craig Gatto, Ph.D.
Molecular Physiology
Employ modern approaches in molecular biology and protein biochemistry along with electrophysiology to study the structure-function, mechanism, biosynthesis, assembly and cellular trafficking of P-type ATPases or ion pumps (e.g. Na,K-ATPase, Ca-ATPases).

Byron Heidenreich, Ph.D.
Behavioral Neuroscience
Neuropsychopharmacology of monoamine neurotransmitters. Neuropharmacology of drugs of abuse and psychotherapeutic medications.

Alysa Vrailas Mortimer, Ph.D.
Molecular Neuroscience and Genetics
Genetics, Genes and Behavior, and the Neurobiology of Aging.

Wolfgang Stein, Ph.D.
Cellular Neuroscience
Sensorimotor processing, motor pattern generation, and neuromodulation of neuronal networks. Combining computer modeling with optical imaging in vitro and in vivo electrophysiology.

Andrés Vidal-Gadea, Ph.D.
Molecular Neuroethology
Neural and genetic bases of behavior from an evolutionary perspective using the model nematode *Caenorhabditis elegans*.

More info: https://goo.gl/9YTs4X

Neuroscience & Physiology Curriculum

BSC 430 Neuroscience
BSC 435 Mammalian Physiology
BSC 490 Biostatistics and BSC 420.27 Biostatistics Lab
Graduate Seminars
BSC 420 Graduate Seminar in Biology
Thesis/Dissertation Research
BSC 499/599 Thesis/Dissertation Research
Elective Courses
BSC 411 Confocal Microscopy in Biology
BSC 415 Advanced Cell Biology I
BSC 418 Biological Microscopy
BSC 419 Molecular Biology of the Gene
BSC 425 Advanced Cell Biology II
BSC 450 Diverse Neuroscience and Physiology courses (Neurophysiology, Dopamine Neuroscience, Neuroethology, Computational Neuroscience, Biostatistics, Immunology etc.)
BSC 486 Ethology
BSC 470 Evolution

Not more than two of the following:
BSC 301 Entomology
BSC 325 Ecological Physiology of Animals
BSC 327 Hormones and Behavior
BSC 345 Introduction to Endocrinology
BSC 346 Developmental Biology of Animals
BSC 353 Biotechnology Lab I, BSC 354 Biotechnology Lab II
BSC 355 Genomics and Bioinformatics
BSC 367 Immunology, BSC 396 Avian Biology
CHE 442 Proteins, CHE 444 Lipids, CHE 464 Kinetics and Dynamics, PSY 418 Learning and Cognition, PSY 421 Advanced Behavior Modification, PSY 468 Advanced Psychopathology and Mental Health Diagnosis