Program Coordinator: V. Fitsanakis

The B.S. in Neuroscience encompasses the study of the anatomy and physiology of the peripheral and central nervous systems. From a biological perspective, neuroscientists are interested in the anatomical connections of the brain and nervous system, and how these different areas communicate with, connect to, and influence each other. From the perspective of the field of psychology, neuroscientists focus on determining how various neural connections are responsible for behavior, personality, and overall mental health. Both approaches incorporate a focus on disease states and how to effectively prevent and treat neurological and psychological injuries.

A major in neuroscience prepares students for a number of different jobs or graduate and professional programs. Students who desire a career in medicine, neurobiology, neuropharmacology, artificial intelligence, or computer science are encouraged to choose electives that are more chemistry, math, and biology related. On the other hand, it is recommended that students interested in teaching, clinical psychology, cognitive psychology, audiology, speech pathology or counseling take neuroscience electives that draw heavily from the Department of Psychology.

A Bachelor of Science in Neuroscience can lead to a career in research, pharmaceutical or biomedical sales, teaching, or a clinical discipline (depending on the electives chosen by the student and advisor). It is also a requirement of the major that students complete an internship that fits their desired occupational path.

The flexibility and interdisciplinary nature of the major serve as an asset to the student applying to clinical school and graduate programs in physical therapy, occupational therapy, pharmacology, and neuroscience. It is important to note, however, that many clinical programs also require two semesters of Organic Chemistry, and two semesters of General Physics, neither of which are included in the requirements for the this program. Thus, students interested in medical school, for example, will need to augment the required curriculum as necessary to meet the prerequisites for post-baccalaureate degrees.

Students who major in neuroscience are not allowed to double major or minor in Biology or Psychology, due to the overlap already present in this program. Thus, students are encouraged to consider other minors that will help them in their chosen careers. Suggestions include Mathematics, Philosophy, Security and Intelligence Studies (SIS), or a foreign language.

Student Learning Outcomes

1. Familiarity with Major Concepts: Students will demonstrate familiarity with major concepts, theoretical perspectives, empirical findings and historical trends in Neuroscience.
2. Understanding and Application of Research Methods: Students will demonstrate understanding and apply research methods in Neuroscience, including research design, data analysis and interpretation.

3. Students will Understand and Apply Neuroscientific Principles: Students will demonstrate understanding and apply neuroscientific principles to cellular, physiological or behavioral topics.

4. Identification and Development of Career-Related Skills and Experiences: Students will identify and develop skills and experience related to desired career goals.

Core Curriculum Requirements
Neuroscience majors should fulfill specified categories of the Core Curriculum by taking the courses indicated below. See the “The Core Curriculum” section of the catalog for additional details.

Science
BIOL 1010
Human Anatomy & Physiology I .......................................................... 4 s.h.

Quantitative Literacy
MATH 2350
Calculus I .............................................................................................. 4 s.h.

Neuroscience Major Requirements
BIOL 1020
Human Anatomy & Physiology II ......................................................... 4 s.h.
CHEM 1110 and 1120
General Chemistry I & II ................................................................. 8 s.h.
PSYC 1520
General Psychology ........................................................................... 4 s.h.
PSYC 2500
Statistics for the Social Sciences ....................................................... 4 s.h.
BIOL 3540
Neurophysiology ................................................................................. 4 s.h.
BIOL 3560
Clinical Neuroanatomy ..................................................................... 4 s.h.
PSYC 3120
Individual Research Project ............................................................... 2 s.h.
BIOL/PSYC 3800
Neuroscience Internship .................................................................. 2 s.h.
IDST 4500 (each semester is 0.5 s.h., repeated for a total of four semesters)
Interdisciplinary Science and Math Seminar ................................... 2 s.h.
BIOL/PSYC 4990
Comprehensive Assessment* ............................................................ 0 s.h.

Choose from the following courses ....................................................... 4 s.h.
PSYC 3020
Cognitive Psychology (4 s.h.)
PSYC 3530
Sensation and Perception (4 s.h.)

Choose from the following courses ....................................................... 4 s.h.
PSYC 3110
Research Methods and Measurement in Psychology (4 s.h.)
BIOL 3750
Research Methods in Biology (4 s.h)

Choose from the following courses ......................................................... 12 s.h.
BIOL 3150
Genetics (4 s.h.)
BIOL 3300
Cell Biology (4 s.h.)
BIOL 3600
Human and Mammalian Physiology (4 s.h.)
BIOL 3700
Biochemistry (4 s.h.)
BIOL 4670
Mammalian Toxicology (4 s.h.)
PSYC 3020
Cognitive Psychology (4 s.h.)
PSYC 3300
Lifespan Human Development (4 s.h.)
PSYC 3310
Child Development (4 s.h.)
PSYC 3320
Adolescent Development (4 s.h.)
PSYC 3350
Abnormal Psychology (4 s.h.)
PSYC 3530
Sensation and Perception (4 s.h.)

Summary of Total Credits
Core Curriculum .......................................................................................... 42 s.h.
Major Requirements ..................................................................................... 54 s.h.
Electives/Minor/2nd Major: .......................................................................... 28 s.h.
Minimum to Earn Bachelor of Science ........................................................ 124 s.h.

* Comprehensive assessment in Neuroscience demonstrates competency in the graduating student’s concentration within Neuroscience: Biology or Psychology. Students must earn a passing grade on either the Major Field Achievement Test (MFAT) in Biology or in Psychology. The appropriate test will be determined by the student’s course work, and by advising in conjunction with the program coordinators for Biology and Psychology.