This major is designed for students with an interest in applying mathematical and computational methodologies towards understanding the structure and functioning of the nervous system. It provides progressive training in interdisciplinary and interfaculty aspects of Neuroscience and serves as a foundation for students interested in pursuing post-graduate education or career opportunities in technically advanced occupations.

**Opportunities for Students**

- **Undergraduate Research**: Work in research labs and engaged in studies that involve the use of computers and other technologies to study the information processing functions of the brain, often in close collaboration with experimentalists.

- **Graduate-Level Course**: With the permission of an advisor, students may elect to take a graduate-level advanced course to fulfill one of their degree requirements.

- **Seminar Series**: The USC Neuroscience community, through various institutes, departments and divisions, sponsors a number of different seminar series often featuring guest speakers such as Stefan Heller and Christopher Cowan.

- **Freshman Science Honors Program**: FSH allows exceptional freshmen to study in an enriched first year science sequence, featuring smaller classes and access to lectures, tours, and field trips.

**Notable Courses**

- **NEUR 408: Systems Neuroscience** — Sensory systems to illustrate basic concepts regarding the functional organization of the brain, from the microscopic arrangement of neural circuits to global processes such as perception.

- **BISC 424: Brain Architecture** — How the parts of the brain are interconnected to form a complex biological computer, from historical, evolutionary, and developmental perspectives.

- **PSYC 304: Sensation and Perception** — Receptor processes and stimulus organization; traditional topics in the perception of objects, space, time. Laboratory demonstrations and exercises.

- **PSYC 425: Functional Imaging of the Human Brain** — Introduction to the physical and physiological bases of Magnetic Resonance Imaging (MRI), and principles of functional MRI, safety, design and analysis of experiments, and operation.
Bachelor of Science (BS) Requirements

Core Requirements*
- BISC 220L: General Biology — Cell Biology and Physiology
- BISC 421: Neurobiology
- CHEM 103: General Chemistry for Environment and Life
  or CHEM 105: General Chemistry
- MATH 125: Calculus I
- MATH 126: Calculus II
- NEUR 408: Systems Neuroscience: From Synapses to Perception
- PHYS 135: Physics for Life Sciences A & B
  or PHYS 151: Fundamentals of Physics I — Mechanics and Thermodynamics
  & PHYS 152: Fundamentals of Physics II — Electricity and Magnetism
- PSYC 100: Introduction to Psychology
- PSYC 274: Statistics
- PSYC 440: Introduction to Cognitive Neuroscience

Biological Area Requirement (select one)**
- BISC 424: Brain Architecture
- BISC 481: Structural Bioinformatics from Atoms to Cells

Computational Introductory Area Requirement (select one)**
- EE 150: Engineering Computational Methods
- CSCI 103: Intro to Programming

Computational Advanced Area Requirement (select two or three)**
- BME 210: Biomedical Computer Simulation Methods
- CSCI 360: Introduction to Artificial Intelligence
- CSCI 455: Introduction to Robotics
- PSYC 450: Neural Network Models of Social and Cognitive Process

Psychology Area Requirement (select one)**
- PSYC 301: Cognitive Processes
- PSYC 326: Behavioral Neuroscience

Math Elective Requirement (select one)*
- MATH 225: Linear Algebra and Linear Differential Equations
- MATH 226: Calculus III
- MATH 245: Mathematics of Physics and Engineering I

*This information is offered as a partial overview only. For additional information, including all major requirements, please consult the USC Catalogue or http://catalogue.usc.edu/schools/college/neur/. Updated as of August 2015.

**This does not represent all options in this category. For a complete list, please consult the USC Catalogue.