

NEUROSCIENCE

The Interdisciplinary Neuroscience Majors and Minor

The Interdisciplinary Neuroscience Majors and Minor provide students with an unusual flexibility. For students committed to in-depth neuroscience education, they can major in either of two tracks: a cognitive/behavioral track that emphasizes the outcome of neural processing and circuit level mechanisms supporting cognition and behavior, and a molecular/cellular track that emphasizes the genetic, biochemical, and cell biological underpinnings of the development and function of the nervous system. Students who wish to focus on another area of study, but gain substantial exposure to the field of neuroscience, may minor in neuroscience. All three options require three courses in neuroscience fundamentals: Introduction to Neuroscience, Neurobiology, and Behavioral and Cognitive Neuroscience. After completing these courses, students may choose among numerous upper-level lecture and lab courses that span the field. In addition, there are currently 20 neuroscientists among the LUC Lake Shore Campus faculty, providing opportunities for independent undergraduate research. Neuroscientists at the LUC Medical Center give talks each year at the Lake Shore Campus, and students are also welcome to arrange research internships with medical school faculty. For additional information, please contact:

Dr. Eric W. Gobel, egobel@luc.edu *Director, Cognitive/Behavioral Neuroscience*

Dr. Bill Rochlin, wrochli@luc.edu *Director, Molecular/Cellular Neuroscience*

Undergraduate Programs

- Cognitive and Behavioral Neuroscience (BS) (<https://catalog.luc.edu/undergraduate/arts-sciences/neuroscience/cognitive-behavioral-neuroscience-bs/>)
- Molecular and Cellular Neuroscience (BS) (<https://catalog.luc.edu/undergraduate/arts-sciences/neuroscience/molecular-cellular-neuroscience-bs/>)
- Neuroscience Minor (<https://catalog.luc.edu/undergraduate/arts-sciences/neuroscience/neuroscience-minor/>)

Neuroscience Department Policies

Double-Dipping with Other Majors/Minors

For students in either track of the Neuroscience Major or the Neuroscience Minor, any courses taken that count toward their Neuroscience Major/Minor may also count toward the following majors and minors:

- BS in Biology (BIOL-BS) (<https://catalog.luc.edu/undergraduate/arts-sciences/biology/biology-bs/>)
- BS in Biology with Ecology Emphasis (BIOE-BS) (<https://catalog.luc.edu/undergraduate/arts-sciences/biology/biology-ecology-emphasis-bs/>)
- BS in Biology with Molecular Emphasis (BIOM-BS) (<https://catalog.luc.edu/undergraduate/arts-sciences/biology/biology-molecular-biology-emphasis-bs/>)
- BS in Psychology (PSYC-BS) (<https://catalog.luc.edu/undergraduate/arts-sciences/psychology/psychology-bs/>)
- Minor in Biology (BIOL-MINR) (<https://catalog.luc.edu/undergraduate/arts-sciences/biology/biology-minor/>)

- Minor in Psychology (PSYC-MINR) (<https://catalog.luc.edu/undergraduate/arts-sciences/psychology/psychology-minor/>)

Students may not double-major in both tracks of the Neuroscience Major or combine the Neuroscience Major with the Neuroscience Minor. For all other majors/minors, the CAS Academic Council's double-dipping policy (<https://catalog.luc.edu/undergraduate/arts-sciences/#policiestext>) shall apply.

Undergraduate Policies and Procedures

Please see Undergraduate Policies and Procedures (<https://catalog.luc.edu/undergraduate-academic-standards-regulations/>) for academic policies that supersede those of academic units within the University.

Neuroscience (NEUR)

NEUR 101 Introduction to Neuroscience (3 Credit Hours)

Pre-requisites: None; *Recommended:* BIOL 101 and PSYC 101

This course will introduce students to basic concepts and the variety of topics in the field of neuroscience, including neuroanatomy (gross and cellular), physiology, neural basis of behavior, malfunctions due to disease and injury, and methods used to study these areas laying a foundation for advanced coursework in neuroscience.

Interdisciplinary Option: Neuroscience

Course equivalencies: X-BIOL 202/PSYC202/NEUR 101

Outcomes:

Knowledge of the organization of the nervous system, cellular events that underlie emotions, learning, and behavior, and awareness of classical and modern methods for advancing the field

NEUR 300 Seminar in Neuroscience (1 Credit Hour)

Pre-requisites: NEUR 101 with grade of C- or better

The seminar introduces students to the interdisciplinary nature of modern neuroscience with an emphasis on the various neuroscience research activities that take place at Loyola University Chicago, and reviews current neuroscience research topics. NEUR 300 is cross-listed with BIOL 303.

Interdisciplinary Option: Neuroscience

Course equivalencies: X-BIOL303/NEUR300

Outcomes:

Students will demonstrate understanding of the interdisciplinary and multidisciplinary nature of modern neuroscience, and the research questions and experimental approaches used at the Lakeshore and Medical Center campuses; Students will complete one midterm essay and one final essay exam that will reflect their understanding of the topics discussed in the seminars

NEUR 301 Laboratory in Neuroscience I (4 Credit Hours)

Pre-requisites: NEUR 101, BIOL 251; and students must be either a Molecular/Cellular Neuroscience Major, a Cognitive/Behavioral Neuroscience major, or a Neuroscience Minor

Students will be trained in various anatomical, physiological, behavioral, and neurobiological modeling techniques used to study the nervous system and the brain in the laboratory. This course is cross-listed as NEUR 301 & PSYC 388.

Interdisciplinary Option: Neuroscience

Course equivalencies: X-NEUR301/PSYC388/BIOL373

Outcomes:

Students will demonstrate understanding of several research designs and methodologies of use in neuroscience research and will gain experience with basic neuroscience laboratory techniques

NEUR 302 Laboratory in Neuroscience II (3 Credit Hours)

Pre-requisites: NEUR 301

Students will receive additional training and experience in specialized laboratory methods and techniques used by Loyola faculty in their Neuroscience research. This experience will help prepare them to contribute creatively to neuroscience research. Students will be assessed as to the quality of 3 items: 1) a written proposal for the independent research project; 2) a 'meeting quality' scientific poster; and 3) a written 'publication quality' scientific paper summarizing the work done for the independent research project.

Interdisciplinary Option: Neuroscience

Course equivalencies: X-BIOL374/NEUR302/PSYC389

Outcomes:

Students will have the opportunity to conduct independent research projects in faculty and student laboratories