NEUROSCIENCE (BS)

Neuroscience is an interdisciplinary major that incorporates existing courses from the natural, computational, and social sciences, as well as specific courses unique to the field of Neuroscience. Neuroscience has quickly become one of the fastest growing areas of study in both the natural and behavioral sciences. Its multidisciplinary nature attracts individuals not just from biology and psychology disciplines, but also from fields such as philosophy, anthropology, economics, mathematics and computer science.

Neuroscience majors are interested in studying the brain and nervous system in multiple ways. They consider fundamental concepts that underlie the function of the nervous system on a cellular and molecular level, how the nervous system produces behavior and cognition, and the role of computer science and mathematics in new technologies and therapies in neuroscience. Additionally, Neuroscience majors can apply their knowledge of the nervous system to human health and disease, as well as public health, philosophy, law, business, computer science, and related fields.

**Program Requirements**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Quarter Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liberal Studies Requirements</td>
<td>68</td>
</tr>
<tr>
<td>Major Core Requirements</td>
<td>48</td>
</tr>
<tr>
<td>Major Electives</td>
<td>24-36</td>
</tr>
<tr>
<td>Concentration Requirements</td>
<td>12-24</td>
</tr>
<tr>
<td>Open Electives</td>
<td>28</td>
</tr>
<tr>
<td><strong>Total hours required</strong></td>
<td><strong>192</strong></td>
</tr>
</tbody>
</table>

**Learning Outcomes**

Students will be able to:

- Describe how the cellular and systems level structure of the nervous system is responsible for neurological function, behavior, and cognition.
- Critically evaluate scientific literature in order to communicate core concepts in a clear and organized manner both verbally and in writing.
- Design and analyze scientific experiments.
- Explain challenges surrounding ethical thinking posed by advancements in neuroscience.
- Relate neuroscience content to other scientific and non-scientific disciplines.

**College Core Requirements**

**Modern Language Requirements**

Students who intend to graduate with the Bachelor of Arts (BA) degree will be required to demonstrate competence in a modern language equivalent to the proficiency attained from one year of college-level language study. Such competence may be demonstrated in one of several ways:

- completing the last course in the fourth-year high school sequence of any language
- completing the last course in the first-year college sequence of any language
- completing a college course beyond the first-year level in any language

- achieving a satisfactory score on any of the Modern Language placement examinations administered at DePaul
- achieving a satisfactory rating in a proficiency examination accepted by DePaul
- achieving a score of 3 or higher on the Advance Placement (AP) test for any language
- achieving a score of 5 or higher in the Language B assessment from a Standard or Higher Level International Baccalaureate (IB) program
- achieving a satisfactory score on the CLEP examination

Please note: Modern Languages courses with an E-designation are taught in English and may not be applied to the Modern Language Requirement.

For further information regarding satisfactory scores and possible credit from the DePaul placement, AP, CLEP, or IB examinations, please contact Student Records.

Students who complete an Inter-College Transfer (ICT) to the College of Science and Health will abide by the College of Science and Health Modern Language Requirement in place on the effective date of the ICT.

BA students who meet College requirements and wish to pursue further work in the language may elect the "Modern Language Option" of the Liberal Studies Program. While Bachelor of Science (BS) students are not required to demonstrate competency in a modern language, the "Modern Language Option" is available to them for language study at any level. Modern Languages courses with an E-designation are taught in English and may not be applied to the Modern Language Option.

**Major Declaration Requirements**

All students in the College are required to declare a major field prior to beginning their junior year. After researching College programs, the student should declare a major field by visiting Campus Connection and using the Declarations and Inter-College Transfer tool. The student will then be assigned a faculty advisor or staff advisor in the department or program and should make an appointment to see that advisor at his or her earliest convenience.

To change major fields, or to declare a minor or concentration, the student must use the Declarations and Inter-College Transfer tool described above. However, for the purpose of exploring the possibility of changing a major field, the student should consult an academic advisor in the College or an academic advisor in the Office for Academic Advising Support.

**Liberal Studies Requirements**

Honors program requirements can be found in the individual Colleges & Schools section of the University Catalog. Select the appropriate college or school, followed by Undergraduate Academics and scroll down.

<table>
<thead>
<tr>
<th>First Year Program</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>LSP 110 DISCOVER CHICAGO</td>
<td>4</td>
</tr>
<tr>
<td>or LSP 111 EXPLORE CHICAGO</td>
<td>4</td>
</tr>
<tr>
<td>LSP 112 FOCAL POINT SEMINAR</td>
<td>4</td>
</tr>
<tr>
<td>WRD 103 COMPOSITION AND RHETORIC I</td>
<td>4</td>
</tr>
<tr>
<td>or WRD 104 COMPOSITION AND RHETORIC II</td>
<td>4</td>
</tr>
<tr>
<td>Quantitative Reasoning</td>
<td></td>
</tr>
</tbody>
</table>
Neuroscience (BS)

Not Required

Sophomore Year
Race, Power, and Resistance
LSP 200 SEMINAR ON RACE, POWER, AND RESISTANCE 4

Junior Year
Experiential Learning
Required 4

Senior Year
Capstone
NEU 390 NEUROSCIENCE CAPSTONE 1 4

1 Students must earn a C- or better.

Learning Domains
Arts and Literature (AL) (https://catalog.depaul.edu/undergraduate-core/liberal-studies-program/liberal-studies-learning-domains/arts-and-literature/)
• 3 Courses Required

Historical Inquiry (HI) (https://catalog.depaul.edu/undergraduate-core/liberal-studies-program/liberal-studies-learning-domains/historical-inquiry/)
• 2 Courses Required

• Not Required

Philosophical Inquiry (PI) (https://catalog.depaul.edu/undergraduate-core/liberal-studies-program/liberal-studies-learning-domains/philosophical-inquiry/)
• 2 Courses Required
(See Note Below)

Religious Dimensions (RD) (https://catalog.depaul.edu/undergraduate-core/liberal-studies-program/liberal-studies-learning-domains/religious-dimensions/)
• 2 Courses Required
(See Note Below)

Scientific Inquiry (SI) (https://catalog.depaul.edu/undergraduate-core/liberal-studies-program/liberal-studies-learning-domains/scientific-inquiry/)
• Not Required

Social, Cultural, and Behavioral Inquiry (SCBI) (https://catalog.depaul.edu/undergraduate-core/liberal-studies-program/liberal-studies-learning-domains/social-cultural-and-behavioral-inquiry/)
• 1 Course Required

Notes
Students must complete one approved ethics course from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Quarter Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSC 208</td>
<td>ETHICS IN TECHNOLOGY</td>
<td>4</td>
</tr>
<tr>
<td>HLTH 229</td>
<td>ETHICS FOR HEALTH SCIENCES</td>
<td>4</td>
</tr>
</tbody>
</table>

Specified required courses within Liberal Studies may have grade minimums (e.g. C- or better). Please consult your advisor or your college and major requirements.

Courses offered in the student’s primary major cannot be taken to fulfill LSP Domain requirements. If students double major, LSP Domain courses may double count for both LSP credit and the second major. Students who choose to take an experiential learning course offered by the major may count it either as a general elective or the Experiential Learning requirement.

In meeting learning domain requirements, no more than one course that is outside the student's major and is cross-listed with a course within the student’s major, can be applied to count for LSP domain credit. This policy does not apply to those who are pursuing a double major or earning BFA or BM degrees.

Major Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Quarter Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 191</td>
<td>GENERAL BIOLOGY I FOR SCIENCE MAJORS</td>
<td>4</td>
</tr>
<tr>
<td>BIO 192</td>
<td>GENERAL BIOLOGY II FOR SCIENCE MAJORS</td>
<td>4</td>
</tr>
<tr>
<td>BIO 193</td>
<td>GENERAL BIOLOGY III FOR SCIENCE MAJORS</td>
<td>4</td>
</tr>
<tr>
<td>CHE 130</td>
<td>GENERAL CHEMISTRY I</td>
<td>4</td>
</tr>
<tr>
<td>&amp; CHE 131</td>
<td>GENERAL CHEMISTRY I LABORATORY</td>
<td>4</td>
</tr>
<tr>
<td>CHE 132</td>
<td>GENERAL CHEMISTRY II</td>
<td>4</td>
</tr>
<tr>
<td>&amp; CHE 133</td>
<td>GENERAL CHEMISTRY LABORATORY II</td>
<td>4</td>
</tr>
<tr>
<td>CHE 134</td>
<td>GENERAL CHEMISTRY III</td>
<td>4</td>
</tr>
<tr>
<td>&amp; CHE 135</td>
<td>GENERAL CHEMISTRY LABORATORY III</td>
<td>4</td>
</tr>
<tr>
<td>PSY 105</td>
<td>INTRODUCTORY PSYCHOLOGY I</td>
<td>4</td>
</tr>
<tr>
<td>PSY 106</td>
<td>INTRODUCTORY PSYCHOLOGY II</td>
<td>4</td>
</tr>
<tr>
<td>NEU 201</td>
<td>INTRODUCTION TO NEUROSCIENCE</td>
<td>4</td>
</tr>
<tr>
<td>NEU 202</td>
<td>ADVANCED NEUROSCIENCE FUNDAMENTALS</td>
<td>4</td>
</tr>
<tr>
<td>NEU 280</td>
<td>RESEARCH METHODS IN NEUROSCIENCE</td>
<td>4</td>
</tr>
<tr>
<td>NEU 390</td>
<td>NEUROSCIENCE CAPSTONE</td>
<td>4</td>
</tr>
</tbody>
</table>

Select one of the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIO 206</td>
<td>BIOSTATISTICS</td>
</tr>
<tr>
<td>PSY 240</td>
<td>STATISTICS I</td>
</tr>
<tr>
<td>IT 223</td>
<td>DATA ANALYSIS</td>
</tr>
<tr>
<td>MAT 242</td>
<td>ELEMENTS OF STATISTICS</td>
</tr>
</tbody>
</table>

Major Electives
Choose between 6 to 9 major electives (24 to 36 quarter hours) depending on the selected concentration. Please refer to concentration
Course Title Quarter Hours

NEU 228 NEUROETHICS 4
NEU 256 INTRODUCTION TO COMPUTATIONAL NEUROSCIENCE 4
NEU 310 SEMINAR IN NEUROPSYCHOPHARMACOLOGY 4
NEU 339 CELLULAR NEUROBIOLOGY 4
or BIO 339 CELLULAR NEUROBIOLOGY 4
NEU 350 SENSORY NEUROSCIENCE 4
NEU 351 NEUROSCIENCE OF MOVEMENT 4
NEU 360 CONVERSATIONS WITH NEUROSCIENTISTS 4
NEU 380 SPECIAL TOPIC IN NEUROSCIENCE 4
NEU 399 INDEPENDENT STUDY IN NEUROSCIENCE 2-4
BIO 201 HUMAN ANATOMY 4
BIO 210 MICROBIOLOGY 4
BIO 220 BIOTECHNOLOGY 4
BIO 250 CELL BIOLOGY 4
BIO 260 GENETICS 4
BIO 301 ANIMAL BEHAVIOR 4
BIO 307 ANIMAL PHYSIOLOGY 4
or BIO 308 HUMAN PHYSIOLOGY 4
or HLTH 301 INTEGRATED HUMAN ANATOMY AND PHYSIOLOGY-A 4
BIO 330 DEVELOPMENTAL BIOLOGY 4
BIO 340 BEHAVIORAL NEUROSCIENCE 4
BIO 341 TOPICS IN NEUROBIOLOGY 4
BIO 342 COGNITIVE NEUROSCIENCE 4
or PSY 379 COGNITIVE NEUROSCIENCE 4
BIO 360 MOLECULAR BIOLOGY 4
BIO 375 INTRODUCTION TO PHARMACOLOGY 4
or HLTH 375 INTRODUCTION TO PHARMACOLOGY 4
BIO 386 ENDOCRINOLOGY 4
CHE 230 ORGANIC CHEMISTRY I 4
& CHE 231 and ORGANIC CHEMISTRY LABORATORY I 4
CHE 232 ORGANIC CHEMISTRY II 4
& CHE 233 and ORGANIC CHEMISTRY LABORATORY II 4
CHE 234 ORGANIC CHEMISTRY III 4
& CHE 235 and ORGANIC CHEMISTRY LABORATORY III 4
CHE 340 BIOCHEMISTRY I 4
& CHE 341 and EXPERIMENTAL BIOCHEMISTRY I 4
CSC 241 INTRODUCTION TO COMPUTER SCIENCE I 4
CSC 250 COMPUTERS AND HUMAN INTELLIGENCE 4
CSC 381 INTRODUCTION TO DIGITAL IMAGE PROCESSING 4
DSC 341 FOUNDATIONS OF DATA SCIENCE 4
HLTH 302 INTEGRATED HUMAN ANATOMY AND PHYSIOLOGY-B 4
PHY 150 GENERAL PHYSICS I 4

For students interested in applying to professional health programs that require Anatomy and Physiology, we recommend choosing from the combination of BIO 201 and BIO 308 or HLTH 301 and HLTH 302.

Concentration Requirements

Students must also complete the requirements from one concentration: Behavioral/Cognitive Neuroscience; Cellular/Molecular Neuroscience; Computational Neuroscience; Integrative Neuroscience. Students are limited to only declaring one concentration.

Students are advised to talk with their advisor before double majoring because some major combinations are prohibited. No more than 50% of the credits that apply to one major may be drawn from another major.

Concentrations, tracks and specializations provide focus to the major. In addition to any college core requirements, liberal studies requirements and major requirements, students are required to choose one of the following concentrations:

- Behavioral/Cognitive Neuroscience Concentration, Neuroscience (BS) (https://catalog.depaul.edu/programs/neuroscience-bs/behavioralcognitive-neuroscience-concentration-neuroscience-bs/)
- Cellular/Molecular Neuroscience Concentration, Neuroscience (BS) (https://catalog.depaul.edu/programs/neuroscience-bs/cellularmolecular-neuroscience-concentration-neuroscience-bs/)
- Computational Neuroscience Concentration, Neuroscience (BS) (https://catalog.depaul.edu/programs/neuroscience-bs/computational-neuroscience-concentration-neuroscience-bs/)
- Integrative Neuroscience Concentration, Neuroscience (BS) (https://catalog.depaul.edu/programs/neuroscience-bs/general-neuroscience-concentration-neuroscience-bs/)
- Pre-Health Concentration, Neuroscience (BS) (https://catalog.depaul.edu/programs/neuroscience-bs/pre-health-concentration-neuroscience-bs/)