NEUROSCIENCE (BS)

This program was approved for students entering the university in the Summer 2019–Spring 2020 catalog year. For more information about catalog year, go to Catalog Year Information (http://catalog.louisville.edu/undergraduate/university-wide-unit-specific-policies/catalog-year).

Bachelor of Science in Neuroscience
Unit: College of Arts and Sciences (http://www.louisville.edu/a-s)  
Department: Psychological and Brain Sciences (http://louisville.edu/psychology); Anatomical Sciences and Neurobiology (http://louisville.edu/medicine/departments/anatomy)
Academic Plan Code(s): NEURBS

Program Information
The Bachelor of Science in Neuroscience (BS in Neuroscience) is an interdisciplinary degree with a STEM+Health focus. The program trains students to critically assess and analyze ideas and concepts from the diverse disciplines that contribute to the field of neuroscience. Students achieve an in-depth understanding of nervous system function, from the molecular level to the cognitive sciences, and become familiar with the techniques used to measure nervous system function from the cellular level to the whole brain.

Graduates of this program are poised for careers in a wide variety of areas, including neuroscience and health-related fields, the social sciences, and the biological sciences. This program also prepares students for advanced-degree study in graduate school and professional degree programs.

Completion of this degree requires work to be submitted for the department’s Learning Outcomes Measurement. For details, contact the department.

Degree Summary

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Education Requirements (<a href="http://catalog.louisville.edu/undergraduate/general-education-requirements">http://catalog.louisville.edu/undergraduate/general-education-requirements</a>)</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td>College/School Requirements</td>
<td></td>
<td>13-15</td>
</tr>
<tr>
<td>Program/Major Requirements</td>
<td></td>
<td>77</td>
</tr>
<tr>
<td>Minimum Total Hours</td>
<td></td>
<td>121-123</td>
</tr>
</tbody>
</table>

Specific coursework information can be found on the Degree Requirements tab.

Admission Requirements
Requirements for admission to the BS in Neuroscience:

1. Complete PSYC 201 (or equivalent) and PSYC 305, earning a grade of C or higher.
2. Complete Statistics Requirement (PSYC 301 or BIOL 350), earning a grade of C or higher. Completion of MATH 205 is required for the degree. For admission to the major, students must have completed the necessary math coursework, or have a math placement score, to satisfy the prerequisites to enroll in MATH 205.
3. Have an overall cumulative GPA of at least 2.5 (no grades of C-minus or lower in core or supporting coursework may be counted toward requirements for the major).
4. Have completed at least 30 hours of degree-applicable credit.

The Application for Major form can be found on the Arts & Sciences Advising Center website (http://louisville.edu/artsandsciences/advising/apply).

General Education

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSYC 201</td>
<td>Introduction to Psychology - SB</td>
<td></td>
</tr>
<tr>
<td>BIOL 240</td>
<td>Unity of Life - S</td>
<td></td>
</tr>
<tr>
<td>CHEM 201</td>
<td>General Chemistry I - S</td>
<td></td>
</tr>
<tr>
<td>CHEM 207</td>
<td>Introduction to Chemical Analysis I - SL</td>
<td></td>
</tr>
<tr>
<td>MATH 205</td>
<td>Calculus I - QR</td>
<td></td>
</tr>
</tbody>
</table>

*All degrees require the completion of the University-wide General Education Program (link provided above). Some General Education requirements may be met in the requirements for the major or supporting coursework, in which case additional electives may be required to complete the minimum hours for the degree.

College/School Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEN 100</td>
<td>Student Success Center Orientation or GEN 101</td>
<td>Arts and Sciences Orientation</td>
</tr>
<tr>
<td>Foreign Language</td>
<td></td>
<td>6-8</td>
</tr>
<tr>
<td>Electives in Humanities or Social Sciences at 300+level</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>WR - two approved courses at the 300 level or above</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Minimum Total Hours: 13-15

Program/Major Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSYC 201</td>
<td>Introduction to Psychology - SB</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 301</td>
<td>Statistics for Psychology or BIOL 350</td>
<td>3</td>
</tr>
</tbody>
</table>
PSYC 302 Research Methods for Psychology 3
PSYC 305 Brain and Behavior 3
PSYC 331 Sensation and Perception 3
BIOL 329 Cellular and Molecular Biology 3
PSYC 355 Neuroscience 3
PSYC 382 Cognitive Neuroscience 3
BIOL 465 Principles of Physiology 3
or BE 354 Anatomy and Physiology 3
PSYC 492 Undergraduate Psychology Research - CUE (or PSYC 495 and PSYC 496) 3
ASNB 502 Fundamentals of Neuroscience 3
One of the following: 3
ASNB 517 Seminar on Developmental Neurobiology
ASNB 566 Synaptic Organization of the Central Nervous System

Supporting Coursework
BIOL 240 Unity of Life - S 3
BIOL 242 Diversity of Life - S 3
BIOL 244 Principles of Biology Laboratory - SL 2
MATH 205 Calculus I - QR 4
CHEM 201 General Chemistry I - S 3
CHEM 202 General Chemistry II - S 3
CHEM 207 Introduction to Chemical Analysis I - SL 1
CHEM 208 Introduction to Chemical Analysis II - SL 1
PHYS 221 Fundamentals of Physics I - S 3
PHYS 222 Fundamentals of Physics II - S 3
PHYS 223 Fundamentals of Physics Lab I - SL 1
PHYS 224 Fundamentals of Physics Laboratory II - SL 1

Electives 4 12
Suggested Electives
ASNB 514 Molecular Neuroscience
BIOL 330 Genetics and Molecular Biology
BIOL 331 Genetics and Molecular Biology: Laboratory
BIOL 415 Biology of the Cell - CUE, WR 5
BIOL 511 Behavioral Endocrinology - CUE, WR 5
BIOL 540 Intermediary Metabolism
CHEM 341 Organic Chemistry I
CHEM 343 Organic Chemistry Laboratory I
CHEM 342 Organic Chemistry II
CHEM 344 Organic Chemistry Laboratory II
CHEM 545 Biochemistry I
PHIL 536 Philosophy of Science
PHIL 580 Foundations of Bioethics
PHIL 581 Current Controversies in Health Care Ethics
PSYC 307 Cognitive Processes
PSYC 306 Life Span Developmental Psychology
PSYC 308 Abnormal Psychology
PSYC 445 Special Topics in Neuroscience - WR

Minimum Program/Major Hours 77
Minimum Total Degree Hours 121-123

Only 60 hours in the major department may be applied toward the Bachelor of Science degree.

At least 50 of the total minimum hours required must be at the 300 level or above.

Students must participate in at least 3 hours of a research experience, which may include independent research or directed readings with a neuroscience faculty mentor.

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<tr>
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<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSYC 492</td>
<td>Undergraduate Psychology Research - CUE</td>
<td></td>
</tr>
<tr>
<td>PSYC 496</td>
<td>Honors Psychology Thesis - CUE, WR</td>
<td></td>
</tr>
</tbody>
</table>

1. Completion of the second semester of a single foreign language; hours will vary depending on the language taken
2. In addition to courses counted toward General Education
3. May be incorporated into other degree requirements
4. Students who satisfy General Education Requirements by courses defined by the program will require additional electives to complete the minimum hours for the degree.
5. Does not satisfy CUE requirement for the Neuroscience BS

Flight Plan

Year 1
Fall
GEN 101 Arts and Sciences Orientation 1
ENGL 101 Introduction to College Writing - WC 3
PSYC 201 Introduction to Psychology - SB 3
BIOL 240 Unity of Life - S 3
CHEM 201 General Chemistry I - S 3
CHEM 207 Introduction to Chemical Analysis I - SL 1
CHEM 208 Introduction to Chemical Analysis II - SL 1

Hours 15

Spring
ENGL 102 Intermediate College Writing - WC 3
BIOL 242 Diversity of Life - S 3
BIOL 244 Principles of Biology Laboratory - SL 2
CHEM 202 General Chemistry II - S 3
CHEM 209 Introduction to Chemical Analysis III 1
PSYC 305 Brain and Behavior 3

Hours 15

Year 2
Fall
BIOL 329 Cellular and Molecular Biology 3
PHYS 221 Fundamentals of Physics I - S 3
PHYS 223 Fundamentals of Physics Lab I - SL 1
PSYC 355 Neuroscience 3

General Education: Cardinal Core Oral Communication – OC 3
MATH 205 Calculus I - QR 4

Hours 17

Spring
BIOL 465 Principles of Physiology 3
PHYS 222 Fundamentals of Physics II - S 3
PHYS 224 Fundamentals of Physics Laboratory II - SL 1
PSYC 301 or BIOL 350 Statistics for Psychology or Biostatistics 3
### Year 3

**Fall**
- **ASNB 502**: Fundamentals of Neuroscience 3
- **PSYC 302**: Research Methods for Psychology 3
- **PSYC 331**: Sensation and Perception 3
- **PSYC 382**: Cognitive Neuroscience 3

**Foreign Language** 3-4

**Hours**: 15-16

### Spring
- **ASNB 517** or **ASNB 566**: Seminar on Developmental Neurobiology or Synaptic Organization of the Central Nervous System 3
- **General Education: Cardinal Core Arts & Humanities – AH** 3
- **General Education: Cardinal Core Historical Perspective – SBH** 3
- **300+ Elective**: Elective in Humanities or Social Sciences 3

**Hours**: 15-16

### Year 4

**Fall**
- **PSYC 492**: Undergraduate Psychology Research - CUE (or Psyc 495) 3
- **300+ WR Elective** 3
- **300+ Elective**: Elective in Humanities or Social Sciences 3
- **300+ Elective** 3
- **Elective** 3

**Hours**: 15

**Spring**
- **300+ WR Elective (or Psyc 496)** 3
- **300+ Elective** 3
- **300+ Elective** 3
- **Elective** 4

**Hours**: 13

**Minimum Total Hours**: 121-123

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1. At least two of the courses selected to satisfy these General Education/Cardinal Core requirements must also satisfy Diversity requirements (at least once course/3 credits each of U.S./D1 and Global/D2 Diversity coursework).