NEUROSCIENCE - B.S.

College of Arts and Sciences
Department of Psychological Sciences
Department of Biological Sciences
https://www.kent.edu/neuroscience/bs

About This Program
Kent State’s Bachelor of Science in Neuroscience program combines biology, chemistry, psychology and other disciplines to provide you with a comprehensive understanding of the brain and nervous system. With access to cutting-edge technology and experienced faculty, you’ll gain the skills and knowledge needed to pursue a career in research or healthcare. Read more...

Contact Information
• Program Coordinator: Wilson Chung, Ph.D. | n (neuroundergrad@kent.edu (Neuroundergrad@kent.edu) | 330-672-3641
• Speak with an Advisor
• Chat with an Admissions Counselor

Program Delivery
• Delivery: In person
• Location: Kent Campus

Admission Requirements
The university affirmatively strives to provide educational opportunities and access to students with varied backgrounds, those with special talents and adult students who graduated from high school three or more years ago.

First-Year Students on the Kent Campus: First-year admission policy on the Kent Campus is selective. Admission decisions are based upon cumulative grade point average, strength of high school college preparatory curriculum and grade trends. Students not admissible to the Kent Campus may be administratively referred to one of the seven regional campuses to begin their college coursework. For more information, visit the admissions website for first-year students.

First-Year Students on the Regional Campuses: First-year admission to Kent State’s campuses at Ashtabula, East Liverpool, Geauga, Salem, Stark, Trumbull and Tuscarawas, as well as the Twinsburg Academic Center, is open to anyone with a high school diploma or its equivalent. For more information on admissions, contact the Regional Campuses admissions offices.

International Students: All international students must provide proof of English language proficiency unless they meet specific exceptions. For more information, visit the admissions website for international students.

Transfer Students: Students who have attended any other educational institution after graduating from high school must apply as undergraduate transfer students. For more information, visit the admissions website for transfer students.

Program Requirements

Major Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSCI 10120</td>
<td>BIOLOGICAL FOUNDATIONS (ELR) (KBS) (KLAB)</td>
<td>4</td>
</tr>
<tr>
<td>BSCI 30140</td>
<td>CELL BIOLOGY</td>
<td>4</td>
</tr>
<tr>
<td>BSCI 30156</td>
<td>ELEMENTS OF GENETICS</td>
<td>4</td>
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<tr>
<td>BSCI 40600</td>
<td>WRITING IN THE BIOLOGICAL SCIENCES (WIC) 1</td>
<td>1</td>
</tr>
<tr>
<td>or PSYC 41901</td>
<td>WRITING IN PSYCHOLOGY (WIC)</td>
<td>1</td>
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<tr>
<td>or PSYC 41980</td>
<td>RESEARCH WRITING IN PSYCHOLOGY (WIC)</td>
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<tr>
<td>CHEM 10060</td>
<td>GENERAL CHEMISTRY I (KBS)</td>
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<tr>
<td>CHEM 10061</td>
<td>GENERAL CHEMISTRY II (KBS)</td>
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<tr>
<td>CHEM 10062</td>
<td>GENERAL CHEMISTRY I LABORATORY (KBS)</td>
<td>1</td>
</tr>
<tr>
<td>CHEM 10063</td>
<td>GENERAL CHEMISTRY II LABORATORY (KBS)</td>
<td>1</td>
</tr>
<tr>
<td>MATH 11010</td>
<td>ALGEBRA FOR CALCULUS (KMCR)</td>
<td>3</td>
</tr>
<tr>
<td>NEUR 10100</td>
<td>SEMINAR IN NEUROSCIENCE</td>
<td>1</td>
</tr>
<tr>
<td>NEUR 30100</td>
<td>NEUROSCIENCE I</td>
<td>3</td>
</tr>
<tr>
<td>NEUR 30200</td>
<td>NEUROSCIENCE II</td>
<td>3</td>
</tr>
<tr>
<td>NEUR 30300</td>
<td>EXPERIMENTAL METHODS IN NEUROSCIENCE</td>
<td>1</td>
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<tr>
<td>PSYC 11762</td>
<td>GENERAL PSYCHOLOGY (DVID) (KSS)</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 21621</td>
<td>QUANTITATIVE METHODS IN PSYCHOLOGY I</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 31574</td>
<td>RESEARCH METHODS IN PSYCHOLOGY (ELR)</td>
<td>3</td>
</tr>
</tbody>
</table>

Neuroscience Electives, choose from the following: 14

BSCI 40147 | DEVELOPMENTAL NEUROBIOLOGY  |               |
BSCI 40151 | MECHANISMS OF DISEASE: OBESITY AND RELATED METABOLIC DISEASES |               |
BSCI 40152 | MOLECULAR MECHANISMS OF DISEASE: NEUROLOGICAL DISORDERS |               |
BSCI 40157 | NEUROBIOLOGY OF DRUG ADDICTION  |            |
BSCI 40158 | MOLECULAR BIOLOGY                 |               |
BSCI 40159 | MOLECULAR BIOLOGY LABORATORY (ELR) (WIC) |               |
BSCI 40431 | NEUROENDOCRINOLOGY                |               |
BSCI 40432 | ENDOCRINOLOGY                     |               |
BSCI 40450 | BIOLOGICAL CLOCKS                 |               |
BSCI 40460 | ADVANCED HUMAN PHYSIOLOGY         |               |
BSCI 40462 | ADVANCED HUMAN PHYSIOLOGY: READINGS AND CASE STUDIES |               |
BSCI 40515 | ANIMAL BEHAVIOR                   |               |
BSCI 40519 | HORMONES AND BEHAVIOR             |               |
NEUR 40192 | INTERNSHIP IN NEUROSCIENCE (ELR) 2  |               |
NEUR 40195 | SPECIAL TOPICS IN NEUROSCIENCE    |               |
NEUR 40196 | INDIVIDUAL INVESTIGATION IN NEUROSCIENCE 3 |          |
PSYC 31634 | ANIMAL COGNITION                  |               |

Former Students: Former Kent State students or graduates who have not attended another college or university since Kent State may complete the reenrollment or reinstatement form on the University Registrar’s website.

Admission policies for undergraduate students may be found in the University Catalog.

Some programs may require that students meet certain requirements before progressing through the program. For programs with progression requirements, the information is shown on the Coursework tab.
Pre-Medicine/Pre-Podiatry Concentration Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 12002</td>
<td>ANALYTIC GEOMETRY AND CALCULUS I (KMCR)</td>
<td>5</td>
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<tr>
<td>MATH 11022</td>
<td>TRIGONOMETRY (KMCR)</td>
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<tr>
<td>CHEM 30482</td>
<td>ORGANIC CHEMISTRY LABORATORY II (KBS)</td>
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<tr>
<td>PSYC 47387</td>
<td>NEUROPSYCHOPHARMACOLOGY</td>
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Minimum Total Credit Hours: 40

Additional Requirements (courses do not count in major GPA)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>PHY 13001</td>
<td>GENERAL COLLEGE PHYSICS I (KBS)</td>
<td>5</td>
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</table>
& PHY 13021 & GENERAL COLLEGE PHYSICS LABORATORY I (KBS) (KLAB) & PHY 23101 & GENERAL UNIVERSITY PHYSICS I (KBS) (KLAB) & PHY 13002 & GENERAL COLLEGE PHYSICS II (KBS) & PHY 13022 & GENERAL COLLEGE PHYSICS LABORATORY II (KBS) (KLAB) & PHY 23102 & GENERAL UNIVERSITY PHYSICS II (KBS) (KLAB) |              |
| UC 10001 | FLASHES 101                                | 1            |
| Foreign Language (see Foreign Language College Requirement below) | 8            |
| Kent Core Composition | 6            |
| Kent Core Humanities and Fine Arts (minimum one course from each) | 9            |

Additional Requirements or Concentration

Choose from the following:

Additional Requirements for Students Not Declaring a Concentration

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Medicine/Pre-Podiatry Concentration Requirements</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Minimum Total Credit Hours: 120

1 A minimum C grade must be earned to fulfill the writing-intensive requirement.
2 Maximum 6 credit hours of NEUR 40192 may be applied toward major requirements.
3 Maximum 6 credit hours of NEUR 40196 may be applied toward major requirements.

Graduation Requirements

Minimum Major GPA: 2.000
Minimum Overall GPA: 2.000

Foreign Language College Requirement, B.S.

- Students pursuing the Bachelor of Science degree in the College of Arts and Sciences must complete 8 credit hours of foreign language. 1
- The Bachelor of Science in Medical Laboratory Science is exempt from this requirement. 2
- Minimum Elementary I and II of the same language

1 All students with prior foreign language experience should take the foreign language placement test to determine the appropriate level at which to start. Some students may start beyond the Elementary I level and will complete the requirement with fewer credit hours and fewer courses. This may be accomplished by (1) passing a course beyond Elementary I through Intermediate II level; (2) receiving credit through one of the alternative credit programs offered by Kent State University; or (3) demonstrating language proficiency comparable to Elementary II of a foreign language. When students complete the requirement with fewer than 8 credit hours and two courses, they will complete remaining credit hours with general electives.
2 The Bachelor of Science in Medical Laboratory Science exemption exists under another college policy (Three-Plus-One Programs).

Roadmaps

Neuroscience Major (No Concentration)

This roadmap is a recommended semester-by-semester plan of study for this major. However, courses designated as critical (!) must be completed in the semester listed to ensure a timely graduation.

<table>
<thead>
<tr>
<th>Semester One Credit Hours</th>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>4</td>
<td>BSCI 10120</td>
<td>BIOLOGICAL FOUNDATIONS (ELR) (KBS) (KLAB)</td>
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<tr>
<td>4</td>
<td>CHEM 10060</td>
<td>GENERAL CHEMISTRY I (KBS)</td>
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<tr>
<td>4</td>
<td>CHEM 10062</td>
<td>GENERAL CHEMISTRY I LABORATORY (KBS)</td>
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<tr>
<td>1</td>
<td>MATH 11010</td>
<td>ALGEBRA FOR CALCULUS (KMC)</td>
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<td>3</td>
<td>NEUR 10100</td>
<td>SEMINAR IN NEUROSCIENCE</td>
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<td>1</td>
<td>UC 10001</td>
<td>FLASHES 101</td>
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<table>
<thead>
<tr>
<th>Semester Two Credit Hours</th>
<th>Code</th>
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<tr>
<td>4</td>
<td>BSCI 30140</td>
<td>CELL BIOLOGY</td>
</tr>
<tr>
<td>4</td>
<td>CHEM 10061</td>
<td>GENERAL CHEMISTRY II (KBS)</td>
</tr>
<tr>
<td>4</td>
<td>CHEM 10063</td>
<td>GENERAL CHEMISTRY II LABORATORY (KBS)</td>
</tr>
<tr>
<td>3</td>
<td>PSYC 11762</td>
<td>GENERAL PSYCHOLOGY (DIVD) (KSS)</td>
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</tbody>
</table>
Kent Core Requirement 3

Credit Hours 15

Semester Three
BSCI 30156 ELEMENTS OF GENETICS 3
NEUR 30100 NEUROSCIENCE I 3
PSYC 21621 QUANTITATIVE METHODS IN PSYCHOLOGY I 3

Foreign Language Requirement 4
Kent Core Requirement 3

Credit Hours 16

Semester Four
NEUR 30100 NEUROSCIENCE I 3
PSYC 21621 QUANTITATIVE METHODS IN PSYCHOLOGY I 3

Kent Core Requirement 3

Credit Hours 16

Semester Five
NEUR 30200 NEUROSCIENCE II 3
NEUR 30300 EXPERIMENTAL METHODS IN NEUROSCIENCE 1

PSYC 31574 RESEARCH METHODS IN PSYCHOLOGY (ELR) 3

Kent Core Requirement 3

Credit Hours 17

Semester Six
BSCI 30130 or BSCI 40430 HUMAN PHYSIOLOGY or ANIMAL PHYSIOLOGY 3

BSCI 30171 GENERAL MICROBIOLOGY 4

MATH 12002 ANALYTIC GEOMETRY AND CALCULUS I (KMCR) 5

PHY 13001 GENERAL COLLEGE PHYSICS I (KBS) and GENERAL COLLEGE PHYSICS LABORATORY I (KBS) (KLAB) or GENERAL UNIVERSITY PHYSICS I (KBS) (KLAB) 5

Neuroscience Electives 5

Credit Hours 17

Pre-Medicine/Pre-Podiatry Concentration
This roadmap is a recommended semester-by-semester plan of study for this major. However, courses designated as critical (!) must be completed in the semester listed to ensure a timely graduation.

Semester One
BSCI 10120 BIOLOGICAL FOUNDATIONS (ELR) (KBS) (KLAB) 4
CHEM 10060 GENERAL CHEMISTRY I (KBS) 4
CHEM 10062 GENERAL CHEMISTRY I LABORATORY (KBS) (KLAB) 1
MATH 11010 ALGEBRA FOR CALCULUS (KMCR) 3
NEUR 10100 SEMINAR IN NEUROSCIENCE 1
UC 10001 FLASHES 101 1

Credit Hours 14

Semester Two
BSCI 30140 CELL BIOLOGY 4
CHEM 10061 GENERAL CHEMISTRY II (KBS) 4

CHEM 10063 GENERAL CHEMISTRY II LABORATORY (KBS) (KLAB) 1
PSYC 11762 GENERAL PSYCHOLOGY (DIVD) (KSS) 3

Kent Core Requirement 3

Credit Hours 15

Semester Three
BSCI 30156 ELEMENTS OF GENETICS 3
CHEM 30475 ORGANIC CHEMISTRY LABORATORY I (ELR) 1
CHEM 30481 ORGANIC CHEMISTRY I 3
NEUR 30100 NEUROSCIENCE I 3
PSYC 21621 QUANTITATIVE METHODS IN PSYCHOLOGY I 3

Kent Core Requirement 3

Credit Hours 16

Semester Four
CHEM 30476 ORGANIC CHEMISTRY LABORATORY II 1
CHEM 30482 ORGANIC CHEMISTRY II 3
MATH 11022 TRIGONOMETRY (KMCR) 3
NEUR 30200 NEUROSCIENCE II 3
NEUR 30300 EXPERIMENTAL METHODS IN NEUROSCIENCE 1
PSYC 31574 RESEARCH METHODS IN PSYCHOLOGY (ELR) 3
SOC 12050 INTRODUCTION TO SOCIOLOGY (DIVD) (KSS) 3

Credit Hours 17

Semester Five
CHEM 40245 INTRODUCTORY BIOLOGICAL CHEMISTRY or BIOCHEMICAL FOUNDATIONS OF MEDICINE 4

PHY 13002 GENERAL COLLEGE PHYSICS II (KBS) and GENERAL COLLEGE PHYSICS LABORATORY II (KBS) (KLAB) or GENERAL UNIVERSITY PHYSICS II (KBS) (KLAB) 5

Neuroscience Electives 5

Credit Hours 17

Minimum Total Credit Hours: 120
Kent Core Requirement  3
Credit Hours  13
Minimum Total Credit Hours:  120

University Requirements

All students in a bachelor’s degree program at Kent State University must complete the following university requirements for graduation.

**NOTE:** University requirements may be fulfilled in this program by specific course requirements. Please see Program Requirements for details.

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flashes 101 (UC 10001)</td>
<td>1 credit hour</td>
</tr>
<tr>
<td>Course is not required for students with 30+ transfer credits (excluding College Credit Plus) or age 21+ at time of admission.</td>
<td></td>
</tr>
<tr>
<td>Diversity Domestic/Global (DIVD/DIVG)</td>
<td>2 courses</td>
</tr>
<tr>
<td>Students must successfully complete one domestic and one global course, of which one must be from the Kent Core.</td>
<td></td>
</tr>
<tr>
<td>Experiential Learning Requirement (ELR)</td>
<td>varies</td>
</tr>
<tr>
<td>Students must successfully complete one course or approved experience.</td>
<td></td>
</tr>
<tr>
<td>Kent Core (see table below)</td>
<td>36-37 credit hours</td>
</tr>
<tr>
<td>Writing-Intensive Course (WIC)</td>
<td>1 course</td>
</tr>
<tr>
<td>Students must earn a minimum C grade in the course.</td>
<td></td>
</tr>
<tr>
<td>Upper-Division Requirement</td>
<td>39 credit hours</td>
</tr>
<tr>
<td>Students must successfully complete 39 upper-division (numbered 30000 to 49999) credit hours to graduate.</td>
<td></td>
</tr>
<tr>
<td>Total Credit Hour Requirement</td>
<td>120 credit hours</td>
</tr>
</tbody>
</table>

Kent Core Requirements

- Kent Core Composition (KCMP)  6
- Kent Core Mathematics and Critical Reasoning (KMCR)  3
- Kent Core Humanities and Fine Arts (KHUM/KFA) (min one course each)  9
- Kent Core Social Sciences (KSS) (must be from two disciplines)  6
- Kent Core Basic Sciences (KBS/KLAB) (must include one laboratory)  6-7
- Kent Core Additional (KADL)  6

Total Credit Hours:  36-37

Program Learning Outcomes

Graduates of this program will be able to:

1. Understand fundamental principles of neuroscience.
2. Acquire fundamental hands-on research skills necessary for laboratory investigations into central nervous system function.
3. Understand proper experimental design, data analysis and communication of research results.
4. Gain greater knowledge and appreciation of the role neuroscience plays in societal issues, such as those related to neurological disorders, mental health, medicine and human and animal behavior.

Full Description

The Bachelor of Science degree in Neuroscience offers a broad-based and hands-on study of the mechanisms of brain function from the cell and molecular level through cognition and behavior. This major is for students interested in medicine, other health professions, research and graduate studies in biology, neuroscience and psychology. The major also prepares students for careers in industries, including biotechnology, pharmaceuticals, research administration and policy, science communication, teaching and other science-related businesses. The neuroscience major includes the following optional concentration:

- The **Pre-Medicine/Pre-Podiatry** concentration provides the courses necessary for admission to advanced degree programs in healthcare and biomedical science professions.