NEUROSCIENCE - B.S.

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

About This Program

The Bachelor of Science in Neuroscience combines biology, chemistry, psychology and other disciplines to provide you with a comprehensive understanding of the nervous system. Together with our Neuroscience faculty, you will gain the advanced skills and knowledge needed to pursue careers in health professions, research or science communication. Read more...

Contact Information

- Wilson Chung, Ph.D. | 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) by earning a minimum 525 TOEFL score (71 on the Internet-based version), minimum 75 MELAB score, minimum 6.0 IELTS score or minimum 48 PTE Academic score, or by completing the ELS level 112 Intensive Program. 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.

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's Academic Policies.

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 program's Coursework tab.

Program Requirements

Major Requirements

| Code | Title | Credit Hours | | |
|---|--|-----------------|--|--|
| Major Requirements (courses count in major GPA) | | | | |
| BSCI 10120 | BIOLOGICAL FOUNDATIONS (ELR) (KBS) (KLAB) | 4 | | |
| BSCI 30140 | CELL BIOLOGY | 4 | | |
| BSCI 30156 | ELEMENTS OF GENETICS | 3 | | |
| BSCI 40600 | WRITING IN THE BIOLOGICAL SCIENCES (WIC) 1 | 1 | | |
| or PSYC 41901 | WRITING IN PSYCHOLOGY (WIC) | | | |
| or PSYC 41980 | RESEARCH WRITING IN PSYCHOLOGY (WIC) | | | |
| CHEM 10060 | GENERAL CHEMISTRY I (KBS) | 4 | | |
| CHEM 10061 | GENERAL CHEMISTRY II (KBS) | 4 | | |
| CHEM 10062 | GENERAL CHEMISTRY I LABORATORY (KBS) (KLAB) | 1 | | |
| CHEM 10063 | GENERAL CHEMISTRY II LABORATORY (KBS) (KLAB) | 1 | | |
| MATH 11010 | ALGEBRA FOR CALCULUS (KMCR) | 3 | | |
| NEUR 10100 | SEMINAR IN NEUROSCIENCE | 1 | | |
| NEUR 30100 | NEUROSCIENCE I | 3 | | |
| NEUR 30200 | NEUROSCIENCE II | 3 | | |
| NEUR 30300 | EXPERIMENTAL METHODS IN NEUROSCIENCE | 1 | | |
| PSYC 11762 | GENERAL PSYCHOLOGY (DIVD) (KSS) | 3 | | |
| PSYC 21621 | QUANTITATIVE METHODS IN PSYCHOLOGY I | 3 | | |
| PSYC 31574 | RESEARCH METHODS IN PSYCHOLOGY (ELR) | 3 | | |
| Neuroscience Elective | s, 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 | | | |

| Minimum Total Cred | lit Hours: | 120 | |
|---|--|-----|--|
| Pre-Medicine/Pre | e-Podiatry Concentration | | |
| Additional Requi | rements for Students Not Declaring a | | |
| Choose from the following: | | 40 | |
| Additional Requirements or Concentration | | | |
| Kent Core Humanities and Fine Arts (minimum one course from each) | | | |
| Kent Core Composition | | | |
| Foreign Language (s | see Foreign Language College Requirement below) | 8 | |
| UC 10001 | FLASHES 101 | 1 | |
| Additional Requirem | nents (courses do not count in major GPA) | | |
| PSYC 47387 | NEUROPSYCHOPHARMACOLOGY | | |
| PSYC 43003 | NEURAL MECHANISMS OF LEARNING AND MEMORY | | |
| PSYC 43002 | CURRENT TECHNIQUES IN BEHAVIORAL NEUROSCIENCE | | |
| PSYC 43001 | CLINICAL NEUROANATOMY | | |
| PSYC 41364 | DRUGS AND BEHAVIOR | | |
| PSYC 41043 | BASIC LEARNING PROCESSES | | |
| PSYC 40446 | COGNITIVE NEUROSCIENCE | | |
| PSYC 40383 | INTRODUCTION TO CLINICAL PSYCHOLOGY | | |
| PSYC 40111 | PSYCHOPATHOLOGY | | |
| PSYC 31634 | ANIMAL COGNITION | | |
| NEUR 40196 | INDIVIDUAL INVESTIGATION IN NEUROSCIENCE ³ | | |

Minimum Total Credit Hours:

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.

Additional Requirements for Students Not Declaring a Concentration

| Code | Title | Credit Hours |
|--------------------------------------|--|-----------------|
| Major Requirem | ents (courses count in major GPA) | |
| Neuroscience El | ectives, choose from the list in the major | 13 |
| Additional Requ | irements (courses do not count in major GPA) | |
| Kent Core Socia | l Sciences (must be from two disciplines) | 3 |
| General Elective hours, including | s (total credit hours depends on earning 120 credit 39 upper-division credit hours) | 24 |
| Minimum Total | Credit Hours: | 40 |

Pre-Medicine/Pre-Podiatry Concentration Requirements

| Code | Title | Credit Hours |
|-----------------------------|--------------------------------------|-----------------|
| Concentration Requir | rements (courses count in major GPA) | |
| BSCI 30130 | HUMAN PHYSIOLOGY | 3 |
| or BSCI 40430 | ANIMAL PHYSIOLOGY | |
| BSCI 30171 | GENERAL MICROBIOLOGY | 4 |
| CHEM 30284 | INTRODUCTORY BIOLOGICAL CHEMISTRY | 4 |
| or CHEM 40245 | BIOCHEMICAL FOUNDATIONS OF MEDICINE | |
| CHEM 30475 | ORGANIC CHEMISTRY LABORATORY I (ELR) | 1 |
| CHEM 30476 | ORGANIC CHEMISTRY LABORATORY II | 1 |
| CHEM 30481 | ORGANIC CHEMISTRY I | 3 |
| CHEM 30482 | ORGANIC CHEMISTRY II | 3 |
| | | |

| MATH 11022 | TRIGONOMETRY (KMCR) | 3 |
|-----------------------------|---|----|
| MATH 12002 | ANALYTIC GEOMETRY AND CALCULUS I (KMCR) | 5 |
| PHY 13001 & PHY 13021 | GENERAL COLLEGE PHYSICS I (KBS) and GENERAL COLLEGE PHYSICS LABORATORY I (KBS) (KLAB) | 5 |
| or PHY 23101 | GENERAL UNIVERSITY PHYSICS I (KBS) (KLAB) | |
| PHY 13002 & PHY 13022 | GENERAL COLLEGE PHYSICS II (KBS) and GENERAL COLLEGE PHYSICS LABORATORY II (KBS) (KLAB) | 5 |
| or PHY 23102 | GENERAL UNIVERSITY PHYSICS II (KBS) (KLAB) | |
| SOC 12050 | INTRODUCTION TO SOCIOLOGY (DIVD) (KSS) | 3 |
| Minimum Total Credit Hours: | | 40 |

Graduation Requirements

| Minimum Major GPA | Minimum Overall GPA |
|-------------------|---------------------|
| 2.000 | 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 following programs are exempt from this requirement: The Bachelor of Science in Cybercriminology and the Bachelor of Science in Medical Laboratory Science.²
- · Minimum Elementary I and II of the same language
- 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 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). The Bachelor of Science in Cybercriminology exemption is due to its extensive collaboration with and contribution from the Information Technology program in the College of Applied and Technical Studies, which does not have a foreign language requirement.

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.

| Semester One | | Credits |
|--------------|--|---------|
| 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 Requi | rement | 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 Langua | ge Requirement | 4 |
| Kent Core Requi | rement | 3 |
| | Credit Hours | 16 |
| Semester Four | | |
| NEUR 30200 | NEUROSCIENCE II | 3 |
| NEUR 30300 | EXPERIMENTAL METHODS IN NEUROSCIENCE | 1 |
| PSYC 31574 | RESEARCH METHODS IN PSYCHOLOGY (ELR) | 3 |
| Foreign Langua | ge Requirement | 4 |
| Kent Core Requi | rement | 3 |
| · · · | Credit Hours | 14 |
| Semester Five | | 0 |
| Neuroscience El | ectives | 9 |
| Kent Core Requi | rement | 3 |
| Kent Cole Requi | Credit Hours | |
| Compostor Civ | Credit Hours | 15 |
| Semester Six | | 1 |
| or | or WRITING IN THE BIOLOGICAL SCIENCES (WIC) | 1 |
| PSYC 41901 | (WIC) | |
| PSYC 41980 | (110) | |
| Neuroscience El | ectives | 9 |
| Kent Core Requi | rement | 3 |
| General Elective | | 3 |
| | Credit Hours | 16 |
| Semester Seven | l i i i i i i i i i i i i i i i i i i i | |
| Neuroscience El | ectives | 6 |
| General Elective | S | 9 |
| | Credit Hours | 15 |
| Semester Eight | | |
| Neuroscience Elective 3 | | 3 |
| General Elective | s | 12 |
| | Credit Hours | 15 |
| | Minimum Total Credit Hours: | 120 |

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 | | Credits |
|--------------|---|---------|
| 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 Requi | rement | 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 Requi | | 3 |
| | Credit Hours | 16 |
| Semester Four | | |
| CHEM 30476 | | 1 |
| CHEM 30482 | | 3 |
| MATH TTU22 | | 3 |
| NEUR 30200 | | 3 |
| NEUR 30300 | | ا د |
| SOC 12050 | | 3 |
| 300 12030 | Credit Hours | 17 |
| Semester Five | orcar riours | |
| 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 & PHY 13021 or PHY 23101 | GENERAL COLLEGE PHYSICS I (KBS) and GENERAL COLLEGE PHYSICS LABORATORY I (KBS) (KLAB) or GENERAL UNIVERSITY PHYSICS I (KBS) (KLAB) | 5 |
| o: | Credit Hours | 17 |
| Semester Six | | |
| or CHEM 40245 | or BIOCHEMICAL FOUNDATIONS OF MEDICINE | 4 |
| PHY 13002 & PHY 13022 or PHY 23102 | GENERAL COLLEGE PHYSICS II (KBS) and GENERAL COLLEGE PHYSICS LABORATORY II (KBS) (KLAB) or GENERAL UNIVERSITY PHYSICS II (KBS) (KLAB) | 5 |
| Neuroscience El | ectives | 5 |
| | Credit Hours | 14 |
| | | |

Semester Seven

| BSCI 40600 or PSYC 41901 or PSYC 41980 | WRITING IN THE BIOLOGICAL SCIENCES (WIC) or WRITING IN PSYCHOLOGY (WIC) or RESEARCH WRITING IN PSYCHOLOGY (WIC) | 1 | |
|--|--|-----|--|
| Neuroscience El | ectives | 6 | |
| Foreign Languag | ge | 4 | |
| Kent Core Requi | rement | 3 | |
| | Credit Hours | 14 | |
| Semester Eight | | | |
| Neuroscience El | ective | 3 | |
| Foreign Languag | ge | 4 | |
| Kent Core Requirement | | 3 | |
| Kent Core Requi | rement | 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.

| Fl | ashes 101 (UC 10001) | 1 credit hour |
|----------------------------|---|-----------------------|
| | Course is not required for students with 30+ transfer credits (excluding College Credit Plus) or age 21+ at time of admission. | |
| Di | versity Domestic/Global (DIVD/DIVG) | 2 courses |
| | Students must successfully complete one domestic and one global course, of which one must be from the Kent Core. | |
| E | periential Learning Requirement (ELR) | varies |
| | Students must successfully complete one course or approved experience. | |
| K | ent Core (see table below) | 36-37 credit hours |
| W | riting-Intensive Course (WIC) | 1 course |
| | Students must earn a minimum C grade in the course. | |
| Upper-Division Requirement | | 39 credit hours |
| | Students must successfully complete 39 upper-division (numbered 30000 to 49999) credit hours to graduate. | |
| Т | otal Credit Hour Requirement | 120 credit hours |

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.