

NEUROSCIENCE - B.S.

College of Arts and Sciences
Department of Psychological Sciences
Department of Biological Sciences

Contact Information

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- Speak with an Advisor
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Fully Offered

- **Delivery:**
 - In person
- **Location:**
 - Kent Campus

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** optional concentration prepares students for a graduate medical or podiatry program.

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 campus 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. Check with a regional campus admissions office to determine application requirements, as they may differ among campuses.

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, minimum 48 PTE score or minimum 100 DET score; or by completing the ESL level 112 Intensive Program. For more information, visit the admissions website for international students.

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.

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 of 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.

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.

Destination Kent State: First Year Experience	1
Course is not required for students with 25 transfer credits, excluding College Credit Plus, or age 21+ at time of admission.	
Diversity 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.	
Experiential Learning Requirement (ELR)	varies
Students must successfully complete one course or approved experience.	
Kent Core (see table below)	36-37
Writing-Intensive Course (WIC)	1 course
Students must earn a minimum C grade in the course.	
Upper-Division Requirement	39
Students must successfully complete 39 upper-division (numbered 30000 to 49999) credit hours to graduate.	
Total Credit Hour Requirement	120

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 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 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	
PSYC 31634	ANIMAL COGNITION	
PSYC 40111	ABNORMAL PSYCHOLOGY	
PSYC 40383	INTRODUCTION TO CLINICAL PSYCHOLOGY	
PSYC 40446	COGNITIVE NEUROSCIENCE	
PSYC 41043	BASIC LEARNING PROCESSES	
PSYC 41364	DRUGS AND BEHAVIOR	
PSYC 43001	CLINICAL NEUROANATOMY	
PSYC 43002	CURRENT TECHNIQUES IN BEHAVIORAL NEUROSCIENCE	

PSYC 43003	NEURAL MECHANISMS OF LEARNING AND MEMORY	
PSYC 47387	NEUROPSYCHOPHARMACOLOGY	
Additional Requirements (courses do not count in major GPA)		
UC 10097	DESTINATION KENT STATE: FIRST YEAR EXPERIENCE	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:		40
Additional Requirements for Students Not Declaring a Concentration		
Pre-Medicine/Pre-Podiatry Concentration		
Minimum Total Credit Hours:		120

¹ A minimum C grade must be earned to fulfill the writing-intensive requirement.

² A maximum 6 credit hours of NEUR 40192 may count towards the major.

Additional Requirements for Students Not Declaring a Concentration

Code	Title	Credit Hours
Major Requirements (courses count in major GPA)		
Neuroscience Electives, choose from the list in the major		13
Additional Requirements (courses do not count in major GPA)		
Kent Core Social Sciences (must be from two disciplines)		3
General Electives (total credit hours depends on earning 120 credit hours, including 39 upper-division credit hours)		24
Minimum Total Credit Hours:		40

Pre-Medicine/Pre-Podiatry Concentration Requirements

Code	Title	Credit Hours
Concentration Requirements (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

- Students pursuing the Bachelor of Science degree in the College of Arts and Sciences must complete 8 credit hours of foreign language.¹
- 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 begin their university foreign language experience 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 the Elementary I through Intermediate II level or (2) receiving credit through Credit by Exam (CBE), the College Level Examination Program (CLEP), the Advanced Placement (AP) exam or credit through the International Baccalaureate (IB) program; or (3) being designated a "native speaker" of a non-English language (consult with the College of Arts and Sciences Advising Office for additional information). When students complete the requirement with fewer than 8 credit hours and two courses, they will complete the remaining hours with general electives.

Roadmaps

- Neuroscience (no concentration)
- Pre-Medicine/Pre-Podiatry Concentration

Neuroscience (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 10097	DESTINATION KENT STATE: FIRST YEAR EXPERIENCE	1
Credit Hours		14

Semester Two		Credits
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		Credits
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		Credits
NEUR 30200	NEUROSCIENCE II	3
NEUR 30300	EXPERIMENTAL METHODS IN NEUROSCIENCE	1
PSYC 31574	RESEARCH METHODS IN PSYCHOLOGY (ELR)	3
Foreign Language Requirement		4
Kent Core Requirement		3
Credit Hours		14

Semester Five		Credits
Neuroscience Electives		9
Kent Core Requirement		3
Kent Core Requirement		3
Credit Hours		15

Semester Six		Credits
BSCI 40600	WRITING IN THE BIOLOGICAL SCIENCES (WIC) or WRITING IN PSYCHOLOGY (WIC)	1
or PSYC 41901	or RESEARCH WRITING IN PSYCHOLOGY (WIC)	
or PSYC 41980		
Neuroscience Electives		9
Kent Core Requirement		3
General Elective		3
Credit Hours		16

Semester Seven		Credits
Neuroscience Electives		6
General Electives		9
Credit Hours		15

Semester Eight		Credits
Neuroscience Elective		3
General Electives		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 10097	DESTINATION KENT STATE: FIRST YEAR EXPERIENCE	1
Credit Hours		14

Semester Two		Credits
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
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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
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Semester Five

BSCI 30130	HUMAN PHYSIOLOGY	3
or	or ANIMAL PHYSIOLOGY	
BSCI 40430		
BSCI 30171	GENERAL MICROBIOLOGY	4
MATH 12002	ANALYTIC GEOMETRY AND CALCULUS I (KMCR)	5
PHY 13001	GENERAL COLLEGE PHYSICS I (KBS)	5
& PHY 13021	and GENERAL COLLEGE PHYSICS LABORATORY	
or	I (KBS) (KLAB)	
PHY 23101	or GENERAL UNIVERSITY PHYSICS I (KBS)	
	(KLAB)	

Credit Hours	17
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Semester Six

CHEM 30284	INTRODUCTORY BIOLOGICAL CHEMISTRY	4
or	or BIOCHEMICAL FOUNDATIONS OF	
CHEM 40245	MEDICINE	
PHY 13002	GENERAL COLLEGE PHYSICS II (KBS)	5
& PHY 13022	and GENERAL COLLEGE PHYSICS LABORATORY	
or	II (KBS) (KLAB)	
PHY 23102	or GENERAL UNIVERSITY PHYSICS II (KBS)	
	(KLAB)	

Neuroscience Electives	5
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Credit Hours	14
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Semester Seven

BSCI 40600	WRITING IN THE BIOLOGICAL SCIENCES (WIC)	1
or	or WRITING IN PSYCHOLOGY (WIC)	
PSYC 41901	or RESEARCH WRITING IN PSYCHOLOGY	
or	(WIC)	
PSYC 41980		

Neuroscience Electives	6
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Foreign Language	4
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Kent Core Requirement	3
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Credit Hours	14
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Semester Eight

Neuroscience Elective	3
Foreign Language	4
Kent Core Requirement	3
Kent Core Requirement	3

Credit Hours	13
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Minimum Total Credit Hours:	120
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