

Neuroscience - B.S.

College of
Arts and Sciences

The Bachelor of Science degree program in Neuroscience provides undergraduate students with an opportunity to engage in the in-depth study of neuroscience from a uniquely interdisciplinary perspective. Students receive extensive exposure to fundamental and applied aspects of neuroscience through classroom and laboratory-based interactions with faculty members and research staff from several departments housed in the College of Arts and Sciences and Medicine. The scope of training spans the entirety of key topics in neuroscience and includes examination of biological systems ranging from cellular/molecular neuroscience; neurophysiology; neuroanatomy; and integrated neuroscience including behavior.

120 hours (minimum)

Any student earning a Bachelor of Science (BS) degree must complete a minimum of 60 hours in natural, physical, mathematical, and computer science. A complete description of College requirements for a Bachelor of Science degree, including a specific listing of courses applicable to the 60-hour requirement, can be found in the Arts and Sciences section of the 2023-2024 Undergraduate Catalog.

UK Core Requirements

See the *UK Core* section of the 2023-2024 Undergraduate Catalog for the complete UK Core requirements. The courses listed below are (a) recommended by the college, or (b) required courses that also fulfill UK Core areas. Students should work closely with their advisor to complete the UK Core requirements.

I. Intellectual Inquiry in Arts and Creativity

Choose one course from approved list.....3

II. Intellectual Inquiry in the Humanities

Choose one course from approved list.....3

III. Intellectual Inquiry in the Social Sciences

PSY 100 Introduction to Psychology or equivalent transfer.....3-4

IV. Intellectual Inquiry in the Natural, Physical, and Mathematical Sciences

CHE 105 General College Chemistry I4

CHE 111 General Chemistry I Laboratory1

V. Composition and Communication I

CIS/WRD 110 Composition and Communication I3

VI. Composition and Communication II

CIS/WRD 111 Composition and Communication II3

VII. Quantitative Foundations

MA 137 Calculus I with Life Science Applications

or

MA 113 Calculus I4

VIII. Statistical Inferential Reasoning

STA 296 Statistical Methods and Motivations.....3

or

PSY 215 Experimental Psychology

and

PSY 216 Applications of Statistics in Psychology.....8

IX. Community, Culture and Citizenship in the USA

Choose one course from approved list.....3

X. Global Dynamics

Choose one course from approved list.....3

UK Core hours:33

Graduation Composition and Communication Requirement (GCCR)

WRD 204 Technical Writing.....3

Graduation Composition and Communication Requirement hours (GCCR)

..... 3

College Requirements

I. Foreign Language (*placement exam recommended*) 0-14

II. Disciplinary Requirements

a. Natural Science (*completed by Major Requirements*).....3

b. Social Science.....3

c. Humanities.....3

III. Laboratory or Field Work.....1

IV. Race and Ethnicity Requirement..... 0-3

V. Electives.....6

College Requirement hours:13-30

Premajor/Preprofessional Requirements

BIO 148 Introductory Biology I3

BIO 152 Introductory Biology II3

BIO 155 Biological Research Skills Lab1

CHE 105 General College Chemistry I4

CHE 111 General Chemistry I Laboratory1

CHE 107 General College Chemistry II3

CHE 113 General Chemistry II Laboratory2

MA 137 Calculus I With Life Science Applications

or

MA 113 Calculus I4

PSY 100 Introduction to Psychology.....4

Premajor/Preprofessional Requirement hours:25

Program Core

BIO 302 Introduction to Neuroscience.....3

BIO 305 Introduction to Neuroscience Techniques.....3

BIO 315 Introduction to Cell Biology

or

BCH 401G Fundamentals of Biochemistry

or

CHE 550/552 Biological Chemistry I/II3-6

BIO 426 Neuroscience Seminar (Subtitle required)1

CHE 230 Organic Chemistry I.....3

CHE 231 Organic Chemistry Laboratory I.....1

– CONTINUED –

The University of Kentucky is accredited by the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC) to award associate, baccalaureate, masters, educational specialist, and doctorate degrees. The University of Kentucky also may offer credentials such as certificates and diplomas at approved degree levels. Questions about the accreditation of the University of Kentucky may be directed in writing to the Southern Association of Colleges and Schools Commission on Colleges at 1866 Southern Lane, Decatur, GA 30033-4097, by calling (404) 679-4500, or by using information available on SACSCOC's website (www.sacscoc.org).

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PHY 211 General Physics.....	5
or	
PHY 231 General University Physics	
and	
PHY 241 General University Physics Laboratory.....	5
WRD 204 Technical Writing.....	3
Program Core hours:	22-26

Guided Electives

Students must complete 27 credit hours of guided electives. At least 12 of the 27 credit hours must come from group one. Students may choose from the remaining courses in group one or group two to equal the 27 credit hours of guided electives. Students cannot enroll in more than 3 credit hours of research courses in one semester even if under a different prefix (i.e., ANA 394, BIO 394, PSY 393, PGY 394) and no more than 6 total credit hours of research may be used toward the major.

Group One (12 credit hours)

ANA 410G Neurobiology of Brain and Spinal Cord Disorders	3
ANA 417G Functional Human Neuroanatomy.....	3
ANA 442 Molecular and Cellular Neurobiology.....	3
BIO 410 Vertebrate Endocrinology.....	3
BIO 446 Neurophysiology Laboratory	3
BIO 447 Animal Senses.....	3
*BIO 535 Comparative Neurobiology and Behavior	3
CHE 556 Elements of Neurochemistry.....	3
PGY 431 Introduction to Neuroendocrinology.....	3
PHA 425G Neuropharmacology:	
Treating Disorders of the Brain.....	3
PSY 459 Neuropharmacology: Drugs and Behavior	3

Group Two

ANA 394 Independent Research in Neurobiology and Neuroscience.....	1-3
BIO 394 Research in Neuroscience	1-3
PGY 394 Independent Research in Physiology and Neuroscience.....	1-3
PSY 393 Research in Neuroscience.....	1-3
*ANA 516 Selected Topics in Advanced Neuroscience	3
**BCH 401G Fundamentals of Biochemistry	3
**BIO 315 Introduction to Cell Biology	3
BIO 375 Behavioral Ecology and Sociobiology.....	3
BIO 440 Comparative and Functional Anatomy	4
BIO 445 The Biology of Sex	3
BIO 507 Biology of Sleep and Circadian Rhythms.....	3
**BIO 510 Recombinant DNA Techniques Laboratory	4
BIO 550 Advanced Physiology.....	3
**CHE 550 Biological Chemistry I	
or	
**CHE 552 Biological Chemistry II.....	6
CHE 232 Organic Chemistry II	3
CHE 233 Organic Chemistry Laboratory II.....	1
*CSD 571 Neural Bases of Speech, Language, and Hearing	4
ENT 509 Brains and Buds: Neuroscience of Pollination.....	3
PHY 213 General Physics.....	5
or	
PHY 232 General University Physics	
and	
PHY 242 General University Physics Laboratory	5
PGY 502 Systems, Cellular and Molecular Physiology	
or	
BIO 502 Systems, Cellular and Molecular Physiology	5
PSY 312 Brain and Behavior.....	3
PSY 330 The Neuroscience of Serial Killers.....	3
PSY 360 Behavioral Genetics.....	3
PSY 424 Human Senses and Perception.....	4

Total Guided Elective hours:

27

**Requires consent of instructor.*

***May only be used as electives if the course is not used to satisfy program core requirements.*

Electives

Choose electives to lead to the minimum total of 120 hours required for graduation...6

Total Minimum Hours Required for Degree **120**