

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, including Biology, Anatomy and Neurobiology, and Psychology. 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 *2016-2017 Undergraduate Bulletin*.

UK Core Requirements

See the *UK Core* section of this Bulletin 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 I 4

CHE 111 Laboratory to Accompany General Chemistry I 1

V. Composition and Communication I

CIS/WRD 110 Composition and Communication I 3

VI. Composition and Communication II

CIS/WRD 111 Composition and Communication II 3

VII. Quantitative Foundations

MA 137 Calculus I with Life Science Applications

or

MA 113 Calculus I 4

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*)

b. Social Science 3

c. Humanities 3

III. Laboratory or Field Work 1

IV. Electives 6

College Requirement hours: 13-27

Premajor/Preprofessional Requirements

BIO 148 Introductory Biology I 3

BIO 152 Principles of Biology II 3

BIO 155 Laboratory for Introductory Biology I 1

CHE 105 General College Chemistry I 4

CHE 111 Laboratory to Accompany General Chemistry I 1

CHE 107 General College Chemistry II 3

CHE 113 Laboratory to Accompany General Chemistry II 2

MA 137 Calculus I With Life Science Applications

or

MA 113 Calculus I 4

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 4

ANA 394 Independent Research in Neurobiology and Neuroscience

or

BIO 394 Research in Neuroscience

or

PSY 393 Research in Neuroscience 6

BIO 315 Introduction to Cell Biology

or

BCH 401G Fundamentals of Biochemistry

or

CHE 550/552 Biological Chemistry I/II 3-6

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University of Kentucky is accredited by the Southern Association of Colleges and Schools Commission on Colleges to award associate, baccalaureate, masters, and doctorate degrees. Contact the Commission on Colleges at 1866 Southern Lane, Decatur, Georgia 30033-4097, call 404-679-4500, or online at www.sacscoc.org for questions about the accreditation of University of Kentucky.

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BIO 426 Neuroscience Seminar	1
CHE 230 Organic Chemistry I	3
CHE 231 Organic Chemistry Laboratory I	1
CHE 232 Organic Chemistry II	3
CHE 233 Organic Chemistry Laboratory II	1
PHY 211/213 General Physics	10
or	
PHY 231/232 General University Physics	
and	
PHY 241/242 General University Physics Laboratory	10
*WRD 204 Technical Writing	3
Program Core hours:	38-41

Guided Electives

Students will choose at least one course from each of the four thematic areas below. Some courses are listed in more than one area. However, the same course cannot be used to satisfy two thematic requirements.

A. Cellular/Molecular

ANA 442 Molecular and Cellular Neurobiology	3
CHE 556 Elements of Neurochemistry	3
†BIO 510 Recombinant DNA Techniques Laboratory	4

B. Physiology

BIO 446 Neurophysiology Laboratory	3
†BIO 535 Comparative Neurobiology and Behavior	3

C. Neuroanatomy

BIO 440 Comparative and Functional Anatomy	4
ANA 417G Functional Human Neuroanatomy	3
PSY 312 Brain and Behavior	3
ANA 209 Principles of Human Anatomy	3

D. Integrated

PSY 312 Brain and Behavior	3
BIO 375 Behavioral Ecology and Sociobiology	3
ANA 410G Neurobiology of Brain and Spinal Cord Disorders	3
†ANA 516 Selected Topics in Advanced Neuroscience	3
†BIO 507 Biology of Sleep and Circadian Rhythms	3
CGS 500 Cognitive Science in Theory and Practice	3
†CSD 571 Neural Bases of Speech, Language, and Hearing	3
PSY 459 Neuropharmacology: Drugs and Behavior	3
BIO 447 Animal Senses	3

Other neuroscience-related courses at the 200-level or above, as approved by DUS in Neuroscience.

†Requires consent of instructor.

Guided Elective hours:	12-14
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Electives

Choose electives to lead to the minimum total of 120 hours

required for graduation	6
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Total Minimum Hours Required for Degree	120
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*Fulfills the Graduation Composition and Communication requirement.