

# BACHELOR OF SCIENCE IN BEHAVIORAL NEUROSCIENCE

## B.S. in Behavioral Neuroscience Overview

Behavioral Neuroscience is a new major in Psychology at the University of Kansas. The concentration in behavioral neuroscience is designed for students with a focused interest in the biological bases of behavior and thought. The concentration is well suited for students who are contemplating professional or mainly research careers in medicine, pharmacology, veterinarian medicine, animal science, neurology, neurobiology, and neuroscience. It is also suitable as a degree for those headed into other health-related fields or graduate school in other areas of psychology. As a behavioral neuroscience major, you will take courses in many different departments because, as you explore the neural basis of behavior and prepare to enter the neuroscience research field, you will need to acquire knowledge in the realms of chemistry, biology, psychology, statistics, and even computer science.

What is Neuroscience? ([http://psych.ku.edu/sites/psych.ku.edu/files/files/What%20is%20Neuroscience\\_Handout.pdf](http://psych.ku.edu/sites/psych.ku.edu/files/files/What%20is%20Neuroscience_Handout.pdf)) [PDF]

Please review our Behavioral Neuroscience B.S. Handout ([http://catalog.ku.edu/liberal-arts-sciences/psychology/bs-behavioral-neuroscience/Complete\\_Handout\\_for\\_New\\_BS\\_Majors\\_2016.pdf](http://catalog.ku.edu/liberal-arts-sciences/psychology/bs-behavioral-neuroscience/Complete_Handout_for_New_BS_Majors_2016.pdf)) [PDF] for specific details on program focus, admission requirements, recommended course schedule and advising information.

For additional information and advising for the BS Major please contact:

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Director, BS Major in Behavioral Neuroscience  
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## Admission to the Major Behavioral Neuroscience Major Admission Criteria

### Application Term

Students should apply to the major during the semester in which major admission criteria will be completed; normally no later than 60 hours, or for transfer students, normally during the initial term at KU. Application to this major after completion of 60 hours, or the initial KU term for transfer students, will likely delay graduation.

### Courses Required

Orientation Seminar in Psychology. Satisfied by:		
PSYC 102	Orientation Seminar in Psychology	1
General Psychology. Satisfied by:		
PSYC 104	General Psychology	3
or PSYC 105	General Psychology, Honors	
Research Methods in Psychology or Statistics in Psychological Research. Satisfied by one of the following:		
PSYC 200	Research Methods in Psychology	
or PSYC 201	Research Methods in Psychology, Honors	
PSYC 210	Statistics in Psychological Research	
or PSYC 211	Statistics in Psychological Research, Honors	
Core Psychology Course. Satisfied by one of the following:		
PSYC 370	Behavioral Neuroscience	3
or PSYC 371	Behavior Neuroscience, Honors	

PSYC 375	Cognitive Neuroscience
PSYC 380	Clinical Neuroscience
or PSYC 381 Clinical Neuroscience, Honors	

### Admission GPA

A minimum 3.0 GPA is required in all courses listed above that have been completed at the time of application to the major. University Course Repeat Policy will apply.

## Requirements for the B.S. Degree B.S. in Behavioral Neuroscience

### Humanities (24 hrs.)

#### Written Communication - Core Skill and Critical Inquiry Composition (0)

Satisfied by one of the following. Requirement must be completed during initial term of admission at KU.

ENGL 101	Composition
ACT English score of 27 or above or SAT English score of 600 or above	
AP English Literature & Composition score of 3 or above	
Equivalent transfer course	

#### Critical Reading and Writing (0)

Satisfied by one of the following. Requirement must be completed within the first academic year at KU.

ENGL 102	Critical Reading and Writing
ENGL 105	Freshman Honors English
AP English Literature & Composition score of 4 or above	
Equivalent transfer course	

#### Sophomore Reading and Writing II (0)

Satisfied by one of the following:

ENGL 203	Topics in Reading and Writing: _____
ENGL 205	Freshman-Sophomore Honors Proseminar: _____
ENGL 209	Introduction to Fiction
ENGL 210	Introduction to Poetry
ENGL 211	Introduction to the Drama
AP English Literature & Composition score of 5 or above	
Equivalent transfer course	

### Argument and Reason

Satisfied by one of the following: 3

COMS 130	Speaker-Audience Communication
PHIL 148	Reason and Argument
Equivalent course	

### Western Civilization - Exploration of One's Own and Diverse Cultures

Advising Alert: Requires sophomore-level standing. Courses at other universities may have the same title but may not meet this requirement.

Satisfied by:

HUM 204	Western Civilization I	3
or HUM 114	Western Civilization I Honors	
HUM 205	Western Civilization II	3
or HUM 115	Western Civilization II Honors	

**Humanities - Understanding the Human Condition**

Satisfied by completing 2 courses (6 hrs.) in any of the following categories: historical studies (requirement code HT), literature and the arts (requirement code HL), philosophy and religion (requirement code HR) and humanities (requirement code H). Approved courses may be searched for availability through the Kyou portal.

**Natural Science (14 hrs. minimum)**

Satisfied by completing 2 of the following 4 sequences AND an extension of 1 sequence (1 additional advanced course), or an approved alternative (14 hrs. minimum). 14

**Biology:**

BIOL 150 Principles of Molecular and Cellular Biology & BIOL 152 and Principles of Organismal Biology

**Chemistry:**

CHEM 130 General Chemistry I & CHEM 135 and General Chemistry II

**Physics:**

PHSX 114 College Physics I & PHSX 115 and College Physics II

**Biological Anthropology:**

ANTH 104/304 Fundamentals of Physical Anthropology

ANTH 340 Human Variation and Evolution  
or ANTH 341 Human Evolution  
or ANTH 350 Human Adaptation  
or ANTH 442 Anthropological Genetics  
or ANTH 447 Human Behavioral Genetics

**Mathematics (14 hrs. minimum)**

Satisfied by completing a total of 4 mathematics courses totaling at least 14 hours, of which at least 6 hours must be calculus or calculus based. The 8 hours of calculus can be satisfied by taking at least one calculus I course (MATH 115 or 125) and one calculus II course (MATH 116 or 126). The remaining four to six hours of mathematics can be satisfied by taking a minimum of two additional math courses at any level (excluding MATH 002). 14

**Computing (6 hrs. minimum)**

Satisfied by: 6

EECS 138 Introduction to Computing: \_\_\_\_\_

An additional course

The second 3 hours could either be a second semester of EECS 138 (focused on a second programming language) or be from an additional approved course that provides an opportunity to gain computing experience. This second course could be PSYC 480 or PSYC 481 if this Independent Study requires independent, original application of the student's computing skills such as computer simulation of cognitive processes, or experience with computationally complex neuroscience techniques, such as brain imaging and mapping, or physiological data collection and analysis. (3)

The second 3 hours could either be a second semester of EECS 138 (focused on a second programming language) or be from an additional approved course that provides an opportunity to gain computing experience. This second course could be PSYC 480 or PSYC 481 if this Independent Study requires independent, original application of the student's computing skills such as computer simulation of cognitive processes, or experience with computationally complex neuroscience

techniques, such as brain imaging and mapping, or physiological data collection and analysis.

**Behavioral Neuroscience Major Course Requirements****Behavioral Neuroscience Prerequisite or Co-Requisite Knowledge (10)**

Majors must complete courses as specified in each of the following areas. These hours do not contribute to the minimum number of hours required for the major.

Orientation Seminar in Psychology. Satisfied by:

PSYC 102 Orientation Seminar in Psychology 1

General Psychology. Satisfied by:

PSYC 104 General Psychology 3  
or PSYC 105 General Psychology, Honors

College Algebra or Pre-Calculus. Satisfied by:

MATH 101 College Algebra (or equivalent) 3  
or MATH 104 Precalculus Mathematics

Introductory Biology Course. Satisfied by

BIOL 100 Principles of Biology 3  
or BIOL 150 Principles of Molecular and Cellular Biology

**Behavioral Neuroscience Core Knowledge and Skills (28)**

Majors must complete coursework in each of the following 4 areas:

Behavioral Neuroscience Courses (6 hours minimum). Satisfied by one of the following: 6

PSYC 370 Behavioral Neuroscience  
or PSYC 371 Behavior Neuroscience, Honors

PSYC 375 Cognitive Neuroscience

PSYC 380 Clinical Neuroscience  
or PSYC 381 Clinical Neuroscience, Honors

Laboratory Courses (9 hours minimum). Satisfied by the following:

PSYC 200 Research Methods in Psychology 3  
or PSYC 201 Research Methods in Psychology, Honors

PSYC 625 Experimental Psychology: Methods in Psychophysiology and Neuroscience 6

Quantitative Courses (9 hours minimum). Satisfied by one of the following: 9

PSYC 210 Statistics in Psychological Research  
or PSYC 211 Statistics in Psychological Research, Honors

PSYC 500 Intermediate Statistics in Psychological Research

PSYC 650 Statistical Methods in Behavioral and Social Science Research I

PSYC 651 Anova and Other Factorial Designs

PSYC 679 Applied Nonparametric Statistical Methods

PSYC 687 Factor Analysis

PSYC 692 Test Theory

PSYC 693 Multivariate Analysis

PSYC 694 Multilevel Modeling I

PSYC 695 Categorical Data Analysis

PSYC 696 Structural Equation Modeling I

Applied Research Experience (4 hours minimum). Satisfied by one of the following: 4

PSYC 449 Laboratory/Field Work in Human Biology

PSYC 460 Honors in Psychology

PSYC 480 Independent Study

PSYC 481	Research Practicum	
<b>Elective Courses in Psychology or Other Disciplines (12)</b>		
Majors must complete 12 hours minimum (other electives may be accepted with permission of the B.S. director) Satisfied by:		12
PSYC 418	Introduction to Cognitive Science or PSYC 318 Cognitive Psychology	
PSYC 432	Human Behavioral Genetics	
PSYC 482	Sensation and Perception	
PSYC 535	Developmental Psychopathology	
PSYC 555	Evolutionary Psychology	
PSYC 605	Health Psychology	
PSYC 630	Clinical Psychology	
PSYC 644	Behavioral Pharmacology	
PSYC 646	Mental Health and Aging	
PSYC 678	Drugs and Behavior	
PSYC 691	The Psychology of Aging	
LING 438	Neurolinguistics I	

**Behavioral Neuroscience Major Hours & GPA**

While completing all required courses, majors must also meet each of the following hour and grade-point average minimum standards:

**Major Hours**

Satisfied by 40 hours of major courses.

**Major Hours in Residence**

Satisfied by a minimum of 15 hours of KU resident credit in the major.

**Major Junior/Senior Hours**

Satisfied by 28 hours of junior/senior level major coursework.

**Major Junior/Senior (300+) Graduation GPA**

Satisfied by a minimum of a 2.0 KU GPA in junior/senior courses (300+) in the major. GPA calculations include all junior/senior courses in the field of study including F's and repeated courses. See the Semester/Cumulative GPA Calculator (<http://clas.ku.edu/undergrad/tools/gpa>).

Below is a sample 4-year plan for students pursuing the BS in Behavioral Neuroscience. To view the list of courses approved to fulfill KU Core Goals, please visit the KU Core website (<http://kucore.ku.edu/courses>).

**Freshman**

Fall	Hours Spring	Hours
Goal 2.2 Oral Communication	3 ENGL 102 (Goal 2.1 Written Communication, 2 Crs Required, BS Writing 2)	3
ENGL 101 (Goal 2.1 Written Communication, 2 Crs Required, BS Writing 1)	3 CHEM 130 (Goal 3 Natural Science, BS Requirement) <sup>2</sup>	5
MATH 101 (Goal 1.2 Quantitative Literacy, BS Math Requirement)	3 MATH 125 (BS Math Requirement)	4
BS Humanities Course (BS Humanities Requirement) <sup>1</sup>	3 PSYC 200 (Major Requirement) <sup>6</sup>	3
PSYC 102 (Major Requirement) <sup>6</sup>	1	

PSYC 104 (Goal 3 Social Science, Major Requirement) <sup>6</sup>	3	
	16	15

**Sophomore**

Fall	Hours Spring	Hours
ENGL 203, 209, 210, or 211 (Goal 1.1 Critical Thinking, Goal 2.1 Written Communication, or Goal 3 Humanities, BS Requirement)	3 COMS 130 or PHIL 148 (BS Requirement)	3
HUM 204 (Goal 4.2 Global Culture, Goal 1.1 Critical Thinking, or Goal 2.2 Written Communication, BS Requirement)	3 HUM 205 (Goal 4.2 Global Awareness or Goal 1.1 Critical Thinking, BS Requirement)	3
BIOL 150 (Goal 3 Natural Science, BS Requirement) <sup>2</sup>	4 BIOL 152 (Goal 3 Natural Science, Degree Requirement) <sup>2</sup>	4
BS Humanities Course 300+ (BS Humanities Requirement) <sup>1</sup>	3 MATH Elective (BS Math Requirement)	3
MATH 126 (BS Math Requirement)	4 PSYC 210 (Major Requirement) <sup>6</sup>	3
	17	16

**Junior**

Fall	Hours Spring	Hours
CHEM 135 (Goal 3 Natural Science, BS Requirement) <sup>2</sup>	5 Additional Computing Course (BS Requirement) <sup>3</sup>	3
EECS 138 (BS Requirement)	3 Behavioral Neuroscience Course 300+ (Major Requirement) <sup>4</sup>	3
Natural Science Extension Course (BS Requirement) <sup>2</sup>	3 Quantitative Course 300+ (Major Requirement) <sup>4</sup>	3
Behavioral Neuroscience Course 300+ (Major Requirement) <sup>4</sup>	3 Applied Research Experience 300+ (Major Requirement) <sup>5</sup>	1-3
	PSYC Elective 300+ (Major Requirement)	4
	14	14-16

**Senior**

Fall	Hours Spring	Hours
Goal 4.1 US Diversity 300+	3 Goal 5 Social Responsibility & Ethics 300+	3
PSYC 625 (Goal 6 Integration & Creativity, Major Requirement)	6 PSYC Elective 300+ (Major Requirement) <sup>4</sup>	3
Quantitative Course 300+ (Major Requirement) <sup>4</sup>	4 PSYC Elective 300+ (Major Requirement) <sup>4</sup>	3
Applied Research Experience 300+ (Major Requirement) <sup>5</sup>	1-3 Elective 300+ (Total Hours)	3

PSYC Elective 300+ (Major Requirement) <sup>4</sup>	3	
	17-19	12

Total Hours: 121-125

- <sup>1</sup> Satisfied by completing 2 courses (6 hrs.) in any of the following categories: historical studies (requirement code HT), literature and the arts (requirement code HL), philosophy and religion (requirement code HR) and humanities (requirement code H).
- <sup>2</sup> The Natural Science requirement is satisfied by completing 2 of the 4 available sequences (see the Degree Requirements tab) AND an extension of 1 sequence (1 additional advanced course), or an approved alternative (14 hrs. minimum).
- <sup>3</sup> Could either be a second semester of EECS 138 (focused on a second programming language) or be from an additional approved course that provides an opportunity to gain computing experience.
- <sup>4</sup> Refer to the Degree Requirements tab for a list of courses that can fulfill this major requirement.
- <sup>5</sup> Students are required to complete 4 hours minimum towards the Applied Research Experience. Refer to the Degree Requirements tab for a list of courses that can fulfill this major requirement.
- <sup>6</sup> The Psychology department requires completion of admission criteria in order to be admitted to the major. Review admission requirements here (<http://catalog.ku.edu/liberal-arts-sciences/psychology/ba-bgs-psychology/#admissiontext>).

**Please note:**

All students in the College of Liberal Arts and Sciences are required to complete 120 total hours of which 45 hours must be at the Jr/Sr (300+) level.

The same course cannot be used to fulfill more than one KU Core Goal.

## Departmental Honors

Students may inquire about departmental honors as soon as they are admitted to the undergraduate major. The department website (<http://psych.ku.edu>) has details. Participation usually begins in the senior year. A 3.25 grade-point average overall and a 3.5 grade-point average in psychology courses are required. Students follow individualized courses of study arranged through the director. Students who complete PSYC 460, individual research, and a paper under the direction of an instructor may graduate with departmental honors.