

## **Bachelor of Science in Neuroscience –Course Requirements**

### **First Year Experience (1 credit hour)**

SCI-I120 (or an equivalent first-year experience course)

### **AREA I: English Composition and Speech Communication (9 credit hours)**

ENG-W131 Elementary Composition I (3 credits)  
ENG-W231 Professional Writing Skills (3 credits)  
COMM-R110 Fundamentals of Speech Communication (3 credits)

### **AREA II: No foreign language required.**

### **AREA IIIA: Humanities, Social Sciences, and Comparative World Cultures (12 credit hours)**

HIST H114 History of Western Civilization II (3 credits)

*and one course each from lists H, S, and C:*

List H: Humanities (3 credits)

List S: Social Sciences (3 credits)

List C: Comparative World Cultures (3 credits)

### **AREA IIIB: Not required**

### **AREA IIIC: Physical and Biological Sciences (19-20 credit hours)**

*15 credits from the following sequences are required.*

CHEM-C105 Principles of Chemistry I (3 credits) **and** Experimental Chemistry I CHEM-C125 (2 credits)  
CHEM-C106 Principles of Chemistry II (3 credits) **and** Experimental Chemistry II CHEM-C126 (2 credits)  
CHEM-C341 Organic Chemistry I (3 credits) **and** CHEM-C343 Organic Chemistry Laboratory I (2 credits)

*And one of the following courses or course sequence:*

CHEM-C342 Organic Chemistry II (3 credits) **and** CHEM-C344 Organic Chemistry Laboratory II (2 credits)

**OR**

PHYS 15200 Mechanics (4 credits)

**OR**

PHYS-P201 General Physics I (5 credits)

Note: One grade of D or D+ will be allowed in AREA IIIC.

### **AREA IIID: Mathematical Sciences (9 credit hours)**

*6 credits from one of the following sequences:*

MATH 23100 Calculus for Life Sciences I (3 credits) **and** MATH 23200 Calculus for Life Sciences II (3 credits)

**OR**

MATH 22100 Calculus for Technology 1 (3 credits) **and** MATH 22200 Calculus for Technology II (3 credits)

*And one of the following courses:*

CSCI-N201 Programming Concepts (3 credits)

**OR**

CSCI-N207 Data Analysis using Spreadsheets (3 credits)

**OR**

CSCI-N211 Introduction to Databases (3 credits)

Note: Computer Science CSCI-N100-level courses and CPT/CIT 106 do not count for any credit towards any degree in the School of Science. Also, CSCI-N241 and CSCI-N299 do not count in AREA IIID, but may count as general electives.

Note: One grade of D or D+ will be allowed in AREA IIID.

### **AREA IV: Neuroscience Major Requirement (48-49 credit hours)**

The Neuroscience Program requires a minimum grade of C in all courses in AREA IV Neuroscience Major (C- grades are unacceptable).

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### **AREA IV Part A: Foundation Courses (25 credit hours)**

BIOL-K101	Concepts of Biology I (5 credits)
BIOL-K103	Concepts of Biology II (5 credits)
BIOL-K416	Cellular & Molecular Neuroscience (3 credits)
PSY-B110	Introduction to Psychology (3 credits)
PSY-B201	Foundations in Neuroscience (3 credits)
PSY-B320	Behavioral Neuroscience (3 credits)
PSY-B499	Capstone Honors Research [ <u>or</u> BIOL-K493 & BIOL-K494; <u>or</u> CHEM-C494 & CHEM-C495 <u>or</u> MATH 49200 <u>or</u> PHYS 49000]

### **AREA IV Part B: Statistical Research Methods (3 credit hours)**

PSY-B305	Statistics (3 credits)
<u>or</u>	
STAT 35000	Introduction to Statistics (3 credits)

### **AREA IV Part C: Neuroscience Electives (18 credit hours)**

Students must complete 3 credits from the biology electives course list, 3 credits from the psychology electives course list and an additional 12 credit hours from any courses included in the biology electives course list, the psychology electives course list or the math/chemistry/physics electives course list.

A course cannot be used to satisfy two AREA requirements. For example, if CHEM-C342 Organic Chemistry II Lecture is used to apply to the AREA IIIC requirement, it cannot be subsequently used to satisfy an AREA IV Part C neuroscience elective requirement. This applies to other courses, including CHEM-C344, PHYS 15200 and PHYS-P201. This is not a complete list.

#### **Biology Electives Course List**

BIOL-K322	Genetics and Molecular Biology (3 credits) [strongly recommended, as this serves as a prerequisite for other higher-level electives and generally is required for admission to graduate and professional programs]
BIOL-K331	Embryology (3 credits)
BIOL-K338	Introductory Immunology (3 credits)
BIOL-K483	Biological Chemistry (3 credits)
BIOL-K484	Cellular Biochemistry (3 credits)
BIOL 55900	Endocrinology (3 credits)
BIOL 56800	Regenerative Biology and Medicine (3 credits)
BIOL 57100	Developmental Neurobiology (3 credits)

#### **Psychology Electives Course List**

PSY-B311	Introductory Laboratory in Psychology (3 credits)
PSY-B334	Perception (3 credits)
PSY-B344	Learning (3 credits)
PSY-B356	Motivation (3 credits)
PSY-B394	Drugs and Behavior (3 credits)
PSY-B398	Brain Mechanisms of Behavior (3 credits)
PSY B3##	{proposed new course} Neurophysiology and Neurochemistry of Behavior (3 credits)
PSY B3##	{proposed new course} Developmental Psychobiology (3 credits)
PSY B3##	{proposed new course} Clinical Neuroscience (3 credits)
PSY-I545	{proposed new course} Psychopharmacology (3 credits)
PSY-I560	{proposed new course} Behavioral Genetics (3 credits)

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### Chemistry/Physics Electives Course List

- CHEM-C342 Organic Chemistry II (3 credits) (If used in AREA IIIC Physical and Biological Sciences, then the course cannot apply to AREA IV Part C requirement.)
- CHEM-C371 Chemical Informatics I (1 credit)
- CHEM-C372 Chemical Informatics II: Molecular Modeling (2 credits)
- CHEM-C484 Biomolecules and Catabolism (3 credits)
- CHEM-C485 Biosynthesis and Physiology (3 credits)
- PHYS-P201 General Physics I (5 credits) or PHYS 15200 Mechanics (4 credits)
- PHYS-P202 General Physics II (5 credits) or PHYS 25100 Heat, Electricity and Optics (5 credits)
- PHYS 58500 Introduction to Molecular Biophysics (3 credits)

### **AREA IV Part D: Upper-Level Laboratory (1-2 credit hours)**

To receive credit for a laboratory for which there is an accompanying pre- or co-requisite lecture, the lecture must be completed with a minimum grade of C.

- BIOL-K323 Genetics and Molecular Biology Laboratory (2 credits)
- BIOL-K325 Cell Biology Laboratory (2 credits)
- BIOL-K333 Embryology Laboratory (1 credit)
- BIOL-K339 Immunology Laboratory (2 credits)
- CHEM-C344 Organic Chemistry Laboratory II (2 credits (If used in AREA IIIC Physical and Biological Sciences, then the course cannot apply to AREA IV Part D requirement.))
- CHEM-C486 Biological Chemistry Laboratory (2 credits)

### **AREA IV Part E: Capstone (1 course or course sequence; where not indicated, credit hours to be determined in consultation with advisor)**

- BIOL-K493 Independent Research (minimally 2 credits) & BIOL-K494 Senior Research Thesis (minimally 1 credit)  
OR
- CHEM-C494 Intro to Capstone in Chemistry (1 credit) & CHEM-C495 Capstone in Chemistry (1 credit)  
OR
- MATH 49200 Capstone Experience  
OR
- PHYS 49000 Undergraduate Readings and Research  
OR
- PSY-B499 Capstone Honors Research

### **AREA V: General Electives (20-22 credit hours)**

Students may choose the remainder of their 120 required credit hours from any IUPUI department, but no more than 6 credits hours of studio, clinical, athletic, or performing arts course work will be approved as electives unless they fulfill the requirements for a second major, a minor, or a certificate.