

NEUROSCIENCE, BACHELOR OF SCIENCE

To obtain a BS with a major in Neuroscience, a student must fulfill university, college, and departmental requirements. As an interdisciplinary major, Neuroscience major requirements meet the college breadth requirement.

Neuroscience Bachelor of Science Requirements

Code	Title	Credits
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GENERAL EDUCATION REQUIREMENTS - 46 Hours Required

Minimum of "C-" required

Fundamental Academic Skills 15

ENGL 1150	ENGLISH COMPOSITION I
ENGL 1160	ENGLISH COMPOSITION II
Writing in the Discipline Course NEUR 3600 OR PSYC 3140	
CMST 1110	PUBLIC SPEAKING FUNDS
or CMST 2120	ARGUMENTATION AND DEBATE
MATH 1120	INTRODUCTION TO MATHEMATICAL AND COMPUTATIONAL THINKING
or MATH 1100	DATA LITERACY AND VISUALIZATION
or MATH 1130	QUANTITATIVE LITERACY
or MATH 1140	QUANTITATIVE REASONING FOR HEALTHCARE PROFESSIONALS
or MATH 1300	COLLEGE ALGEBRA WITH SUPPORT
or STAT 1100	DATA LITERACY AND VISUALIZATION
or STAT 1530	ELEMENTARY STATISTICS

Distribution Requirements 31

Natural Science - From two disciplines and at least one lab - 7 hrs

Social Science - From two disciplines - 9 hrs

Humanities and Fine Arts - From two disciplines- 9 hrs

Global Diversity - 3 hrs

US Diversity - 3 hrs

MAJOR REQUIREMENTS

**Course will satisfy UNO's General Education requirement

^Course requires pre-requisite(s)

Note: BIOL 1450 may be used either in Core or in Path, not both

Neuroscience Major - 50-59 Hours Required

Required Neuroscience Fundamentals Courses (Core) 20-23

NEUR 1000	SUPERHEROES, ZOMBIES, CYBORGS AND DROIDS: COULD THEY LIVE AMONG US? (** ^)
or BIOL 1450	BIOLOGY I
NEUR 1520	INTRODUCTION TO NEUROSCIENCE I (^)
NEUR 1540	INTRODUCTION TO NEUROSCIENCE II (^)
PSYC 3130	STATISTICS FOR THE BEHAVIORAL SCIENCES (^)
NEUR 3600	RESEARCH METHODS IN NEUROSCIENCE (^)
or PSYC 3140	RESEARCH METHODS IN PSYCHOLOGY

Select one of the following:

PHYS 1110 & PHYS 1154	GENERAL PHYSICS I and GENERAL PHYSICS LABORATORY I (** ^)
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OR

CHEM 1140 & CHEM 1144	FUNDAMENTALS OF COLLEGE CHEMISTRY and FUNDAMENTALS OF COLLEGE CHEMISTRY LABORATORY (** ^)
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OR

CHEM 1180 & CHEM 1184	GENERAL CHEMISTRY I and GENERAL CHEMISTRY I LABORATORY (** ^)
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and

CHEM 1190 & CHEM 1194	GENERAL CHEMISTRY II and GENERAL CHEMISTRY II LABORATORY (^)
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Neuroscience Pathways: select one of the following 12-17

Pre-Health & Traditional Path - 12-17 credit hours

BIOL 1450	BIOLOGY I (^)
or BIOL 1750	BIOLOGY II
BIOL 2140	GENETICS (^)

Select one of the following:

PHYS 1120 & PHYS 1164	GENERAL PHYSICS II and GENERAL PHYSICS LABORATORY II (^)
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OR

CHEM 2210 & CHEM 2214	FUNDAMENTALS OF ORGANIC CHEMISTRY and FUNDAMENTALS OF ORGANIC CHEMISTRY LABORATORY (^)
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OR

CHEM 2250 & CHEM 2260	ORGANIC CHEMISTRY I and ORGANIC CHEMISTRY II (^)
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and

CHEM 2274	ORGANIC CHEMISTRY LABORATORY (^)
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Philosophy Path - 12-14 credit hours

NEUR 1560	NEUROSCIENCE PATHWAYS TO DISCOVERY (^)
or BIOL 1450	BIOLOGY I
or BIOL 1750	BIOLOGY II
or BIOL 2140	GENETICS
PHIL 1030	INTRODUCTION TO PHILOSOPHY: BRAINS, MINDS, AND MACHINES (**)

PHIL 2030	INTRODUCTION TO ETHICS (**)
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PHIL 1210	CRITICAL REASONING
or PHIL 2010	SYMBOLIC LOGIC
or MEDH 2010	SYMBOLIC LOGIC

Medical Humanities Path - 12-14 credit hours

NEUR 1560	NEUROSCIENCE PATHWAYS TO DISCOVERY (^)
or BIOL 1450	BIOLOGY I
or BIOL 1750	BIOLOGY II
or BIOL 2140	GENETICS

MEDH 1000	INTRODUCTION TO MEDICAL HUMANITIES (**)
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MEDH/HIST 2030	HISTORY OF MEDICINE: FROM ANTIQUITY TO THE PRESENT (** ^)
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MEDH/PHIL 2300	BIOMEDICAL ETHICS
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Computing Path - 12-14 credit hours

NEUR 1560	NEUROSCIENCE PATHWAYS TO DISCOVERY (^)
or BIOL 1450	BIOLOGY I
or BIOL 1750	BIOLOGY II
or BIOL 2140	GENETICS
CIST 1600	INTRODUCTION TO PROGRAMMING USING PRACTICAL SCRIPTING (^)
BIOI 1000	DIGITAL HEALTH AND BIOLOGICAL SYSTEMS (**)
BIOI 2000	FOUNDATIONS OF BIOINFORMATICS (^)

Advanced Neuroscience Courses**18-19**

In addition to the required fundamentals courses, 18-19 credit hours as a combination from the Cornerstone Neuroscience Lecture (3 credits), Laboratory (3 – 4 credits), and Block I, Block II, and Block III Courses (12 credits) from the lists below must be selected. Within the 12 hour credit selection, at least 3 credits must come from Block I and at least 3 credits must come from Block II. To complete the 18 credits required, a minimum of 6 credits can be taken from a combination of Block I, Block II, and Block III. No more than three hours of Experiential Study in Neuroscience (NEUR 4960) may be applied to the Additional Neuroscience Courses category. NEUR 4910, NEUR 4920, and NEUR 4930 may be taken more than once as long as they are different topics. No courses can double-count within this 18 credit hour group.

Select one of the following Cornerstone lab courses -

NEUR 4200	ADVANCED NEUROSCIENCE LABORATORY (^)
NEUR/BIOL 4810	BEHAVIORAL GENETICS (^)
PSYC/BIOL 4280	ANIMAL BEHAVIOR LABORATORY (^)

Select one of the following Cornerstone lecture courses that has not already been used to satisfy the Neuroscience Block Courses requirement below

NEUR 4000	SYSTEMS NEUROSCIENCE (^)
NEUR 4160	NEUROPHARMACOLOGY (^)
NEUR 4330	SOCIAL NEUROSCIENCE (^)
NEUR 4480	NEUROIMMUNOLOGY (^)
NEUR/BIOL 4870	MOLECULAR AND CELLULAR NEUROBIOLOGY (^)
NEUR/BIOL 4890	GENES, BRAIN, AND BEHAVIOR (^)
PSYC/BIOL 4320	HORMONES & BEHAVIOR (^)

Block I, II, and III Courses**Select at least one of the following from Block I Neuroscience Choices: Molecular and Cellular Neuroscience**

NEUR 4000	SYSTEMS NEUROSCIENCE (^)
NEUR 4160	NEUROPHARMACOLOGY (^)
NEUR 4290	NEUROETHOLOGY (^)
NEUR 4340	ADVANCED BEHAVIORAL NEUROSCIENCE (^)
NEUR 4480	NEUROIMMUNOLOGY (^)
NEUR 4640	NEURAL MECHANISMS OF SUBSTANCE USE DISORDERS (^)
NEUR 4840	GLIA IN HEALTH AND DISEASE (^)
NEUR 4850	NEUROBIOLOGY OF LEARNING AND MEMORY (^)
NEUR 4870	MOLECULAR AND CELLULAR NEUROBIOLOGY (^)
NEUR/BIOL 4890	GENES, BRAIN, AND BEHAVIOR (^)
NEUR 4910	SPECIAL TOPICS IN NEUROSCIENCE - BLOCK 1 (^)

Select at least one of the following from Block II Neuroscience Choices: Behavioral and Cognitive Neuroscience

NEUR/BIOL/GERO 3500	BIOLOGICAL PRINCIPLES OF AGING (^)
NEUR/GERO 4050	ADVANCED BIOLOGY OF AGING
NEUR/PSYC 4230	BEHAVIORAL NEUROSCIENCE (^)
NEUR 4330	SOCIAL NEUROSCIENCE (^)
NEUR/BMCH 4650	NEUROMECHANICS OF HUMAN MOVEMENT (^)
NEUR 4920	SPECIAL TOPICS IN NEUROSCIENCE - BLOCK 2 (^)
PSYC 4090	COGNITIVE NEUROSCIENCE (^)
PSYC 4210	SENSATION AND PERCEPTION (^)
PSYC/PHIL 4250	LIMITS OF CONSCIOUSNESS (^)
PSYC/BIOL 4270	ANIMAL BEHAVIOR (^)
PSYC/BIOL 4320	HORMONES & BEHAVIOR (^)
Block III Additional Neuroscience Choices:	
NEUR 4930	SPECIAL TOPICS IN NEUROSCIENCE - NEURO ELECTIVE BLOCK (^)
NEUR 4960	EXPERIENTIAL STUDY IN NEUROSCIENCE (^)

College Breadth

College of Arts and Sciences' college breadth requirement satisfied by this major

Bachelor Science Cognate Requirement**15**

Students must complete 15 credits worth of a cognate set of courses (see below) OR may choose a minor of at least 15 hours or a double major. Courses taken within the major may not also be used toward the completion of cognate coursework. Six (6) hours of cognate coursework may double-count with your Gen Ed requirements. No more than 6 hours of cognate coursework may be at the 1000 level. At least 3 hours of cognate coursework must be at the 3000-4000 level. Note that some classes have prerequisites.

ANTH 1050	INTRODUCTION TO ANTHROPOLOGY (**)
ANTH 3910	INTRODUCTION TO PHYSICAL ANTHROPOLOGY (** ^)
ANTH 4230	ETHNOMEDICINES OF THE AMERICAS (^)
ANTH 4240	MEDICAL ANTHROPOLOGY
BIOI 1000	DIGITAL HEALTH AND BIOLOGICAL SYSTEMS (**)
BIOI 2000	FOUNDATIONS OF BIOINFORMATICS (^)
BIOL 2740	HUMAN ANATOMY AND PHYSIOLOGY I (^)
BIOL 2840	HUMAN ANATOMY AND PHYSIOLOGY II (^)
BIOL 3020	MOLECULAR BIOLOGY OF THE CELL (^)
BIOL 3240	INTRODUCTION TO IMMUNOLOGY (^)
BIOL 4110	STATISTICS FOR BIOLOGICAL SCIENCES (^)
BIOL 4130	MOLECULAR GENETICS (^)
BIOL 4140	CELLULAR BIOLOGY (^)
BIOL 4230	EVOLUTION (^)
BIOL 4260	BEHAVIORAL ECOLOGY (^)
BIOL 4650 & BIOL 4654	BIOCHEMISTRY I and BIOCHEMISTRY I LABORATORY (^)
BIOL 4730	VERTEBRATE ENDOCRINOLOGY (^)
BIOL 4740	ANIMAL PHYSIOLOGY (^)

BIOL 4850	DEVELOPMENTAL BIOLOGY (^)
BIOL 4860	COMPARATIVE GENOMICS (^)
BIOL 4960	ADVANCED GENETICS (^)
BMCH 2400	HUMAN PHYSIOLOGY & ANATOMY I (**)
BMCH 2500	HUMAN PHYSIOLOGY AND ANATOMY II (^)
BMCH 4100	BIOINSPIRED ROBOTICS
CHEM 3650 & CHEM 3654	FUNDAMENTALS OF BIOCHEMISTRY and FUNDAMENTALS OF BIOCHEMISTRY LABORATORY (^)
CHEM 4610	BIOCHEMISTRY OF METABOLISM (^)
CHEM 4650 & 4650	BIOCHEMISTRY I and BIOCHEMISTRY I (^)
CSCI 1200 & CSCI 1204	COMPUTER SCIENCE PRINCIPLES and COMPUTER SCIENCE PRINCIPLES LABORATORY (** ^)
ENVN 4320	ECOLOGICAL SUSTAINABILITY AND HUMAN HEALTH (^)
MATH 1940	CALCULUS FOR BIOMEDICINE (^)
PHIL 2020	INTRODUCTION TO PHILOSOPHY OF MIND
PHIL 3650	PHILOSOPHY OF MIND (^)
PHIL 4220	NEUROETHICS (^)
PHYS 3300	INTRODUCTION TO BIOMEDICAL PHYSICS (^)
PHYS 3500	ELEMENTS OF ELECTRONICS (^)
PHYS 4500	BIOLOGICAL PHYSICS (^)
PSYC 1010	INTRODUCTION TO PSYCHOLOGY I (**)
PSYC 1020	INTRODUCTION TO PSYCHOLOGY II (^)
PSYC 2024	EXPLORATIONS IN THE SCIENCE OF PSYCHOLOGY (^)
PSYC 3520	CHILD PSYCHOLOGY (^)
PSYC 4020	LEARNING (^)
PSYC 4024	LABORATORY IN PSYCHOLOGY: LEARNING (^)
PSYC 4234	LABORATORY IN PSYCHOLOGY: BEHAVIORAL NEUROSCIENCE (^)
PSYC 4440	ABNORMAL PSYCHOLOGY (^)
PSYC 4460	PSYCHOLOGY OF ADULT DEVELOPMENT AND AGING (^)
PSYC 4470	MENTAL HEALTH AND AGING (^)
PSYC 4990	SENIOR THESIS (^)

ELECTIVES

Elective hours as required to reach a total of 120 hours

Concentration Offered

- Computing & Neurotechnology (<http://catalog.unomaha.edu/undergraduate/college-arts-sciences/neuroscience/neuroscience-bs/computing-neurotechnology-conc/>)

Neuroscience Bachelor of Science Four Year Plan**Freshman**

Fall		Credits
NEUR 1000 or BIOL 1450	SUPERHEROES, ZOMBIES, CYBORGS AND DROIDS: COULD THEY LIVE AMONG US? or BIOLOGY I	3-5
ENGL 1150	ENGLISH COMPOSITION I (^)	3

NEUR 1520	INTRODUCTION TO NEUROSCIENCE I	3
MATH 1300	COLLEGE ALGEBRA WITH SUPPORT	4

*ENGL 1150: requires placement via AP, ACT, or EPPE.

**MATH 1300 or higher, or placement via ACT/SAT/Math Placement Exam is required prior to CHEM 1140/1144, CHEM 1180/1184, or PHYS 1110/1154. Please confer with your advisor for options.

Credits 13-15**Spring**

Neuroscience Pathway Course		3-5
ENGL 1160	ENGLISH COMPOSITION II (**)	3
NEUR 1540	INTRODUCTION TO NEUROSCIENCE II (***)	3
Neuroscience Pathway Course		3
Elective		3

**ENGL 1160: requires ENGL 1150 or placement via AP or EPPE.

***NEUR 1540: requires NEUR 1520

Credits 15-17**Sophomore****Fall**

CHEM 1140 & CHEM 1144	FUNDAMENTALS OF COLLEGE CHEMISTRY and FUNDAMENTALS OF COLLEGE CHEMISTRY LABORATORY (^)	5
PSYC 3130	STATISTICS FOR THE BEHAVIORAL SCIENCES (**)	3
Humanities/Fine Arts course + U.S. Diversity		3
Neuroscience Block 2 Course		3

*CHEM 1140: requires MATH 1220 or 1300 or higher or placement via ACT/SAT/Math Placement Exam. Neuroscience majors may take CHEM 1180/1184 and CHEM 1190/1194 in lieu of CHEM 1140/1144. MATH 1300 or 1320 or higher is a prereq for CHEM 1180-1184. May also take PHYS 1110/1154 in lieu of Chemistry coursework.

**PSYC 3130: requires MATH 1220, 1120, 1300, or STAT 1530. Appropriate scores on the ACT/SAT/Math Placement Exam may also serve as an acceptable prereq.

Credits 14**Spring**

Neuroscience Pathway Course		3-5
CMST 1110 or CMST 2120	PUBLIC SPEAKING FUNDS or ARGUMENTATION AND DEBATE	3
NEUR 3600 or PSYC 3140	RESEARCH METHODS IN NEUROSCIENCE (**) or RESEARCH METHODS IN PSYCHOLOGY	3-4
Social Science course + Global Diversity		3

*CHEM 2210: requires CHEM 1140/1144 or CHEM 1190/1194 with grade of C- or higher. Neuroscience majors may take CHEM 1180/1184 and CHEM 1190/1194 in lieu of CHEM 1140/1144, and CHEM 2250, CHEM 2260-2274 in lieu of CHEM 2210-2214. May also take PHYS 1110/1154 and PHYS 1120/1164 in lieu of Chemistry coursework.

**NEUR 3600 and PSYC 3140: require PSYC 3130 and ENGL 1160.

Credits 12-15**Junior****Fall**

Neuroscience Pathway Course		3-4
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Neuroscience Block 1 Course	3
Humanities/Fine Arts Course	3
Cognate Course**	3
Elective	3

*BIOL 2140: requires BIOL 1450, and CHEM 1140/1144 (or CHEM 1180/1184)

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Credits 15-16

Spring

NEUR 4200	ADVANCED NEUROSCIENCE LABORATORY (*)	3
OR		
PSYC/BIOL 4280	ANIMAL BEHAVIOR LABORATORY	
OR		
NEUR/BIOL 4810	BEHAVIORAL GENETICS	
Supporting Neuroscience coursework (Block 1, 2, or 3)		3
Humanities/Fine Arts Course**,***		3
Social Science***		3
Cognate Course^		3

*NEUR 4200: requires NEUR 1520, 1540, PSYC 3130, 3140, and BIOL 1450. PSYC/BIOL 4280 requires PSYC 3130, PSYC 3140 and either PSYC/BIOL 4270 or PSYC/BIOL 4320. NEUR/BIOL: requires BIOL 2140.

**HFA course must come from 2nd discipline.

***Consider taking J-Session course for this or the HFA course.

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Credits 15

Senior

Fall

Cornerstone Neuroscience Lecture Course*	3
Neuroscience coursework (Block 1, 2, or 3)	3
Social Science Course**	3
Cognate Course***	3
Elective	3

*Cornerstone Neuroscience Lecture options include: NEUR 4000; NEUR/PSYC 4160; NEUR 4480; NEUR 4330; NEUR/BIOL 4870; NEUR/BIOL 4890; PSYC/BIOL 4320

**SS course must come from 2nd discipline.

***Students must complete 15 credits worth of a cognate set of courses OR may choose a minor of at least 15 hours or a double major. Six (6) hours of cognate coursework may double-count with your Gen Ed requirements. No more than 6 hours of cognate coursework may be at the 1000 level. At least 3 hours of cognate coursework must be at the 3000-4000 level. Note that some classes have prerequisites. Courses are listed in the catalog.

Credits 15

Spring

Neuroscience coursework (Block 1, 2, or 3)	3
Cognate Course*	3
Elective**	3
Elective**	3
Elective**	3

*Students must complete 15 credits worth of a cognate set of courses OR may choose a minor of at least 15 hours or a double major. Six (6) hours of cognate coursework may double-count with your Gen Ed requirements. No more than 6 hours of cognate coursework may be at the 1000 level. At least 3 hours of cognate coursework must be at the 3000-4000 level. Note that some classes have prerequisites. Courses are listed in the catalog.

**120 credits minimally needed for a degree. Take as many electives as is needed to reach this minimum. Students need 27 upper level credits throughout the degree. Electives may need to be selected at the 3000- 4000 level to reach this minimum.

Credits 15

Total Credits 114-122

This roadmap is a suggested plan of study and does not replace meeting with an advisor. Please note that students may need to adjust the actual sequence of courses based on course availability. Please consult an advisor in your major program for further guidance.

This plan is not a contract and curriculum is subject to change

Additional Information About this Plan:

University Degree Requirements: The minimum number of hours for a UNO undergraduate degree is 120 credit hours. Please review the requirements for your specific program to determine all requirements for the program. In order to graduate on-time (four years for an undergraduate degree), you need to take 30 hours each year.

Placement Exams: For Math, English, Foreign Language, a placement exam may be required. More information on these exams can be found at <https://www.unomaha.edu/enrollment-management/testing-center/placement-exams/information.php>

**Transfer credit or placement exam scores may change suggested plan of study