

COMPUTING & NEUROTECHNOLOGY CONCENTRATION

Neuroscience, Bachelor of Science with a Concentration in Computing and Neurotechnology Requirements

Code Title Credits
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)

Neuroscience Major - 53-57 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:

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

or

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

or both

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

and

CHEM 1190 & CHEM 1194 GENERAL CHEMISTRY II and GENERAL CHEMISTRY II LABORATORY (^)

Required Courses 9

CIST 1600 INTRODUCTION TO PROGRAMMING USING PRACTICAL SCRIPTING (^)

BIOI 1000 DIGITAL HEALTH AND BIOLOGICAL SYSTEMS (**)

BIOI 2000 FOUNDATIONS OF BIOINFORMATICS (^)

Select 2 from the following courses (At least one from ACMP or BIOI) 6

BIOI 4950 SPECIAL TOPICS IN BIOINFORMATICS (^)

ACMP 4000 SPECIAL TOPICS IN IT INNOVATION

ACMP 4260 USER EXPERIENCE DESIGN

NEUR 4000 SYSTEMS NEUROSCIENCE (^)

NEUR 4160 NEUROPHARMACOLOGY (^)

NEUR 4330 SOCIAL NEUROSCIENCE (^)

NEUR 4340 ADVANCED BEHAVIORAL NEUROSCIENCE (^)

NEUR 4480 NEUROIMMUNOLOGY (^)

NEUR 4840 GLIA IN HEALTH AND DISEASE (^)

NEUR 4870 MOLECULAR AND CELLULAR NEUROBIOLOGY (^)

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 Advanced 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 Supporting 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 4650 & BMCH 4650	NEUROMECHANICS OF HUMAN MOVEMENT and 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 Advanced Neuroscience Choices:

NEUR 4930	SPECIAL TOPICS IN NEUROSCIENCE - NEURO ELECTIVE BLOCK (^)
NEUR 4960	EXPERIENTIAL STUDY IN NEUROSCIENCE (^)

College Breadth 0

Neuroscience majors satisfy College of Arts and Sciences' Option 3 for college breadth, a CAS interdisciplinary 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 & CHEM 4654	BIOCHEMISTRY I and BIOCHEMISTRY I LABORATORY (^)
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