

CLINICAL NEUROSCIENCE MAJOR

Program Curriculum

Code	Title	Credits
Degree Core Requirements		
CHEM 1035	General Chemistry ¹	3
CHEM 1036	General Chemistry ¹	3
NEUR 1004	Neuroscience Orientation Seminar ¹	2
NEUR 2025	Introduction to Neuroscience ^{1,2}	3
NEUR 2026	Introduction to Neuroscience ^{1,2}	3
NEUR 2035	Neuroscience Laboratory ¹	1
NEUR 2036	Neuroscience Laboratory ¹	1
NEUR 4044	Neuroscience Senior Seminar ^{1,2}	3
PSYC 1004	Introductory Psychology ^{1,3}	3
Subtotal		22
Major Requirements		
BIOL 1115	Principles of Biology Laboratory ¹	1
BIOL 1116	Principles of Biology Laboratory ¹	1
CHEM 1045	General Chemistry Laboratory	1
CHEM 1046	General Chemistry Laboratory	1
CHEM 2535	Organic Chemistry ²	3
CHEM 2536	Organic Chemistry ²	3
CHEM 2545	Organic Chemistry Laboratory ²	1
CHEM 2546	Organic Chemistry Laboratory ²	1
NEUR 3044	Cellular and Molecular Neuroscience ²	3
NEUR 3084	Cognitive Neuroscience ²	3
NEUR 4034	Diseases of the Nervous System ²	3
PHYS 2205	General Physics ²	3
PHYS 2206	General Physics ²	3
PHYS 2215	General Physics Laboratory ²	1
PHYS 2216	General Physics Laboratory ²	1
STAT 3616	Biological Statistics ²	3
Subtotal		32
Restricted Electives		
Select two of the following: ^{4,5}		6
NEUR 2554	Experimental Neuroscience ²	
NEUR 2594	Exploring Clinical Neuroscience ²	
NEUR 3054	Brain-Body Interactions in Health and Disease ²	
NEUR 3074	Evolutionary Neuroscience ²	
NEUR 3144	Mechanisms of Learning and Memory ²	
NEUR 3234	The Artificial Brain ²	
NEUR 3554	Neuroscience Research and Practical Experience ²	
NEUR 3594	Neurobiology of Psychiatric Disorders ²	
NEUR 3774	Neuroendocrinology ²	
NEUR 3844	Computational Neuroscience and Neural Engineering ²	
NEUR 3914	Neuroscience of Drug Addiction ²	
NEUR 3944	War and the Brain ²	
NEUR 4054	Developmental Neuroscience ²	
NEUR 4064	Neuropharmacology ²	

NEUR 4314	Genetics in Neuroscience ²	
NEUR 4364	Neuroscience of Language and Communication Disorders ²	
NEUR/ECON/ PSYC 4454	Neuroeconomics ²	
NEUR 4514	Neuroimmunology in Health and Disease ²	
NEUR 4594	Clinical Neuroscience in Practice ²	
NEUR 4814	Nutritional Neuroscience ²	
NEUR 4914	Drug Development in Neuroscience ²	
NEUR 4994	Undergraduate Research (may only be taken after one term of NEUR 2994)	
Select one of the following:		3
ALS 2304	Comparative Animal Physiology and Anatomy ²	
ALS 4554	Neurochemical Regulation ²	
BCHM 2024	Concepts of Biochemistry ²	
BCHM 3114	Biochemistry for Biotechnology and the Life Sciences ²	
BIOL 2004	Genetics ²	
BIOL 2134	Cell Function and Differentiation ²	
BIOL 3404	Introductory Animal Physiology ²	
BIOL 4824	Bioinformatics Methods ²	
BMSP 2135	Human Anatomy & Physiology ²	
BMSP 2136	Human Anatomy and Physiology ²	
CHEM 4554	Drug Chemistry ²	
CHEM 4615	Physical Chemistry for the Life Sciences ²	
CHEM 4616	Physical Chemistry for the Life Sciences ²	
NEUR 2464	Neuroscience and Society	
NEUR 2554	Experimental Neuroscience ²	
NEUR 2594	Exploring Clinical Neuroscience ²	
NEUR 3034	Global Perspectives Pre-Departure ²	
NEUR 3054	Brain-Body Interactions in Health and Disease ²	
NEUR 3074	Evolutionary Neuroscience ²	
NEUR 3144	Mechanisms of Learning and Memory ²	
NEUR 3234	The Artificial Brain ²	
NEUR 3554	Neuroscience Research and Practical Experience ²	
NEUR 3774	Neuroendocrinology ²	
NEUR 3844	Computational Neuroscience and Neural Engineering ²	
NEUR 3914	Neuroscience of Drug Addiction ²	
NEUR 3944	War and the Brain ²	
NEUR 3594	Neurobiology of Psychiatric Disorders ²	
NEUR 4054	Developmental Neuroscience ²	
NEUR 4064	Neuropharmacology ²	
NEUR 4314	Genetics in Neuroscience ²	
NEUR 4364	Neuroscience of Language and Communication Disorders ²	
NEUR/ECON/ PSYC 4454	Neuroeconomics ²	
NEUR 4514	Neuroimmunology in Health and Disease ²	
NEUR 4594	Clinical Neuroscience in Practice ²	
NEUR 4814	Nutritional Neuroscience ²	
NEUR 4914	Drug Development in Neuroscience ²	

NEUR 4994	Undergraduate Research (may only be taken after two terms of undergraduate research at the 2994 level)	
PHYS 4714	Introduction to Biophysics ²	
PSYC 2044	Psychology of Learning ²	
PSYC 2064	Introduction to Neuroscience of Behavior ²	
PSYC 4044	Advanced Learning ²	
PSYC 4114	Cognitive Psychology ²	
PSYC 4064	Physiological Psychology ²	
PSYC 4074	Sensation and Perception ²	
STAT 4204	Experimental Designs ²	
Subtotal		9
Free Electives		
Select 12 credits of free electives		12
Subtotal		12
Pathways to General Education		
<i>Pathways Concept 1 - Discourse</i>		
Select six credits in Pathway 1f (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G01F)		6
Select three credits in Pathway 1a (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G01A)		3
<i>Pathways Concept 2 - Critical Thinking in the Humanities</i>		
Select six credits in Pathway 2 (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G02)		6
<i>Pathways Concept 3 - Reasoning in the Social Sciences</i>		
Select six credits in Pathway 3 (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G03)		6
<i>Pathways Concept 4 - Reasoning in the Natural Sciences</i>		
BIOL 1105	Principles of Biology ¹	3
BIOL 1106	Principles of Biology ¹	3
<i>Pathways Concept 5 - Quantitative and Computational Thinking</i>		
MATH 1025	Elementary Calculus (5F) ¹	3
MATH 1026	Elementary Calculus (5F) ¹	3
STAT 3615	Biological Statistics (5A) ²	3
<i>Pathways Concept 6 - Critique and Practice in Design and the Arts</i>		
Select three credits in Pathway 6a (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G06A)		3
Select three credits in Pathway 6d (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G06D)		3
<i>Pathways Concept 7 - Critical Analysis of Identity and Equity in the United States</i>		
Select three credits in Pathway 7 (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G07)		3
Subtotal		45
Total Credits		120

¹ **Grade Requirements:** Students must earn a grade of "C-" or better in all core neuroscience coursework (CHEM 1035 General Chemistry, CHEM 1036 General Chemistry, NEUR 1004 Neuroscience Orientation Seminar, NEUR 2025 Introduction to Neuroscience, NEUR 2026 Introduction to Neuroscience, NEUR 2035 Neuroscience Laboratory, NEUR 2036 Neuroscience Laboratory, NEUR 4044 Neuroscience Senior Seminar, PSYC 1004 Introductory Psychology) or the equivalent coursework. Students must also earn a "C-" or better in BIOL 1105 Principles of Biology, BIOL 1106

Principles of Biology, BIOL 1115 Principles of Biology Laboratory, BIOL 1116 Principles of Biology Laboratory, MATH 1025 Elementary Calculus, and MATH 1026 Elementary Calculus.

Only two attempts, including course withdrawals with a grade of "W," are allowed for each core neuroscience course, BIOL 1105 Principles of Biology, BIOL 1106 Principles of Biology, BIOL 1115 Principles of Biology Laboratory, BIOL 1116 Principles of Biology Laboratory, MATH 1025 Elementary Calculus, and MATH 1026 Elementary Calculus.

² **Prerequisites:** This check sheet contains courses that have at least one prerequisite that may not be included as part of this degree. Please see your advisor or consult the Undergraduate Course Catalog for more information.

³ Because PSYC 1004 Introductory Psychology is in the "Core" requirements, it *may not* double count as a concept 3 course.

⁴ Courses may not double count with the credits chosen for any other CNEU requirement.

⁵ If NEUR 4994 Undergraduate Research is selected, research must total 3 credits.

Grade Requirements and Progress Toward Degree Policy

Students must earn a grade of C- or better in the following neuroscience courses within 3 attempts: BIOL 1105 Principles of Biology, BIOL 1106 Principles of Biology, BIOL 1115 Principles of Biology Laboratory, BIOL 1116 Principles of Biology Laboratory, CHEM 1035 General Chemistry, CHEM 1036 General Chemistry, MATH 1025 Elementary Calculus or MATH 1225 Calculus of a Single Variable, MATH 1026 Elementary Calculus or MATH 1226 Calculus of a Single Variable, NEUR 1004 Neuroscience Orientation Seminar, NEUR 2025 Introduction to Neuroscience, NEUR 2026 Introduction to Neuroscience, NEUR 2035 Neuroscience Laboratory, NEUR 2036 Neuroscience Laboratory, NEUR 4044 Neuroscience Senior Seminar, PSYC 1004 Introductory Psychology.

NEUR 1004 can be satisfied with any First-Year Experience course taken at Virginia Tech.

If you have transferred in any of the courses listed above with a C or better, or have equivalent AP/IB/CLEP credit, you have met the minimum grade requirement.

A withdrawal (W) counts as an attempt.

If these requirements are not met, you will be asked to leave the School of Neuroscience.

Graduation Requirements

Graduation Requirements

Student must complete a minimum of 120 credit hours with an overall GPA of 2.0 and a minimum in-major GPA of 2.0. For purposes of GPA computation, courses IN-MAJOR will include Core requirements, Major requirements, Restricted Electives, BIOL 1105 Principles of Biology, BIOL 1106 Principles of Biology, BIOL 1115 Principles of Biology Laboratory, BIOL 1116 Principles of Biology Laboratory, and MATH 1025 Elementary Calculus-MATH 1026 Elementary Calculus.

Double Majors/Minors

The School of Neuroscience offers majors in Cognitive and Behavioral Neuroscience, Clinical Neuroscience, Computational and Systems

Neuroscience, and Experimental Neuroscience. Courses for these majors overlap slightly. Therefore, students may not pursue multiple majors within the School.

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Terminology

Pathways Requirements: Pathways to General Education is defined by the university as “A vibrant, flexible, and innovative general education program that provides a coherent and meaningful learning experience and allows students to integrate the learning for use throughout their lifetimes.”

Core Neuroscience Requirements: Core neuroscience requirements are those requirements that must be fulfilled by all students in the School of Neuroscience, regardless of major.

Major Requirements: Major requirements are those requirements that are unique to the CNEU major and do not apply across all School of Neuroscience majors.

Restricted Elective: Restricted elective courses provide students the autonomy to select 9 or more credits of coursework within an approved list to count towards the students’ degree requirements. These courses expand on the depth and breadth of the CNEU major.

Free Elective: Free elective credits may consist of any credit-bearing Virginia Tech coursework to ensure that students reach the 120 credits required by the university to earn a bachelor’s degree. Coursework that does not apply elsewhere towards the degree will apply here (this includes non-duplicative coursework for double majors, minors, or AP coursework that does not count elsewhere towards the degree).

- PHYS 2205 General Physics, PHYS 2215 General Physics Laboratory: PHYS 2305 Foundations of Physics
- PHYS 2206 General Physics, PHYS 2216 General Physics Laboratory: PHYS 2306 Foundations of Physics
- STAT 3615 Biological Statistics-STAT 3616 Biological Statistics: STAT 3005 Statistical Methods-STAT 3006 Statistical Methods

Foreign Language Requirement

Foreign Language Requirement

Students who did not successfully complete at least two years of a single foreign, classical, or sign language during high school must successfully complete six semester hours of a single foreign, classical, or sign language at the college level. Courses taken to meet this requirement do not count toward the hours required for graduation. Please consult the Undergraduate Catalog for details.

Acceptable Substitutions

Acceptable Substitutions

- CHEM 1035 General Chemistry-CHEM 1036 General Chemistry: CHEM 1055 General Chemistry for Chemistry Majors-CHEM 1056 General Chemistry for Chemistry Majors
- CHEM 1045 General Chemistry Laboratory-CHEM 1046 General Chemistry Laboratory: CHEM 1065 General Chemistry for Chemistry Majors Lab-CHEM 1066 General Chemistry for Chemistry Majors Lab
- CHEM 2535 Organic Chemistry- CHEM 2536 Organic Chemistry: CHEM 2565 Principles of Organic Chemistry-CHEM 2566 Principles of Organic Chemistry
- CHEM 2545 Organic Chemistry Laboratory- CHEM 2546 Organic Chemistry Laboratory: CHEM 2555 Organic Synthesis and Techniques Lab- CHEM 2556 Organic Synthesis and Techniques Lab
- MATH 1025 Elementary Calculus-MATH 1026 Elementary Calculus:MATH 1225 Calculus of a Single Variable-MATH 1226 Calculus of a Single Variable
- MATH 1025 Elementary Calculus-MATH 1026 Elementary Calculus: MATH 1225 Calculus of a Single Variable-MATH 1026 Elementary Calculus
- NEUR 1004 Neuroscience Orientation Seminar: Any approved FYE course