College of Science
School of Neuroscience
For student date of entry under UG Catalog 2023-24
Bachelor of Science in Neuroscience
Major: **Experimental Neuroscience (EXPN)**

1. Pathways to General Education Requirements (45 credits)

Concept 1F **Discourse** (Foundational, 6 credits)
_____ (3) _____ (3)

Concept 1A **Discourse** (Advanced, 3 credits)
_____ (3)

Concept 2 **Critical Thinking in the Humanities** (6 credits)
_____ (3) _____ (3)

Concept 3 **Reasoning in the Social Sciences** (6 credits)
_____ (3) _____ (3)

Concept 4 **Reasoning in the Natural Sciences** (6 credits)
BIOL 1105 Principles of Biology[1] (3) BIOL 1106 Principles of Biology[1] (3)

Concept 5F **Quantitative and Computational Thinking** (Foundational, 6 credits)
MATH 1025 Elementary Calculus[1] (3) MATH 1026 Elementary Calculus[1] (3)

Concept 5A **Quantitative and Computational Thinking** (Advanced, 3 credits)
#STAT 3615 Biological Statistics (3)

Concept 6A **Critique and Practice in Design and the Arts** (Arts, 3 credits)
_____ (3)

Concept 6D **Critique and Practice in Design and the Arts** (Design, 3 credits)
_____ (3)

Concept 7 **Critical Analysis of Identity and Equity in the United States** (3 credits)
_____ (3)

2. Core Neuroscience Requirements (22 credits)

NEUR 1004[1]	Neuroscience Orientation Seminar	_____ (2)
PSYC 1004*[1]	Introductory Psychology	_____ (3)
CHEM 1035[1]	General Chemistry	_____ (3)
CHEM 1036[1]	General Chemistry	_____ (3)
#NEUR 2025[1]	Introduction to Neuroscience	_____ (3)

#NEUR 2026[1]	Introduction to Neuroscience	_____ (3)
NEUR 2035[1]	Neuroscience Laboratory	_____ (1)
NEUR 2036[1]	Neuroscience Laboratory	_____ (1)
#NEUR 4044[1]	Neuroscience Senior Seminar	_____ (3)

** Since PSYC 1004 is a Core Requirement, it may not count as a Concept 3 course*

3. Experimental Neuroscience Major Requirements (27 credits)

BIOL 1115[1]	Principles of Biology Lab	_____ (1)
BIOL 1116[1]	Principles of Biology Lab	_____ (1)
#CHEM 1045	General Chemistry Lab	_____ (1)
#CHEM 1046	General Chemistry Lab	_____ (1)
#NEUR 2554	Experimental Neuroscience	_____ (3)
#NEUR 3044	Cellular and Molecular Neuroscience	_____ (3)
#NEUR 3084	Cognitive Neuroscience	_____ (3)
#NEUR 3554	Neuroscience Research and Practical Experience	_____ (3)
#PHYS 2205	General Physics	_____ (3)
#PHYS 2206	General Physics	_____ (3)
#PHYS 2215	General Physics Lab	_____ (1)
#PHYS 2216	General Physics Lab	_____ (1)
#STAT 3616	Biological Statistics	_____ (3)

4. Restricted Electives (12 credits)

Students must complete 12 credits of restricted electives, including:

a. Nine (9) credits with a NEUR prefix from the approved list.
b. At least three (3) additional restricted elective ***credits*** from the approved list.

Section 4a (9 credits)

Choose three (3) of the following courses. Courses may not double count with credits chosen for other EXPN requirements. If NEUR 4994 is selected, it must total 3 credits.

#NEUR 2594	Exploring Clinical Neuroscience	_____ (3)
#NEUR 3144	Mechanisms of Learning and Memory	_____ (3)
#NEUR 3234	The Artificial Brain	_____ (3)
#NEUR 3594	Neurobiology of Psychiatric Disorders	_____ (3)
#NEUR 3774	Neuroendocrinology	_____ (3)
#NEUR 3844	Computational Neuroscience and Neural Engineering	_____ (3)
#NEUR 3914	Neuroscience of Drug Addiction	_____ (3)
#NEUR 3944	War and the Brain	_____ (3)
#NEUR 4034	Diseases of the Nervous System	_____ (3)
#NEUR 4314	Genetics in Neuroscience	_____ (3)
#NEUR 4364	Neuroscience of Language and Communication Disorders	_____ (3)
#NEUR 4454	Neuroeconomics *(cross-listed with ECON 4454 and PSYC 4454)*	_____ (3)
#NEUR 4514	Neuroimmunology in Health and Disease	_____ (3)
#NEUR 4594	Clinical Neuroscience in Practice	_____ (3)
#NEUR 4914	Drug Development in Neuroscience	_____ (3)
#NEUR 4994	Undergraduate Research *(may only be taken after one term of NEUR 2994)*	_____ (3)

Section 4b (3 credits)

Choose at least three (3) credits from the following course list. Courses may not double count with credits chosen for other EXPN requirements.

#ALS 2304	Comparative Animal Physiology and Anatomy	_____ (4)
#ALS/BIOL 4554	Neurochemical Regulation	_____ (3)
#BCHM 2024	Concepts of Biochemistry	_____ (3)
#BCHM 3114	Biochemistry for Biotechnology	_____ (3)
#BIOL 2004	Genetics	_____ (3)

#BIOL 2134	Cell Function and Differentiation	_____ (3)
#BIOL 3404	Introductory Animal Physiology	_____ (3)
#BIOL 4824	Bioinformatics Methods	_____ (3)
#BMSP 2135	Human Anatomy and Physiology	_____ (3)
#BMSP 2136	Human Anatomy and Physiology	_____ (3)
#CHEM 2514	Survey of Organic Chemistry	_____ (3)
#CHEM 2535	Organic Chemistry	_____ (3)
#CHEM 2536	Organic Chemistry	_____ (3)
#CHEM 2545	Organic Chemistry Lab	_____ (1)
#CHEM 2546	Organic Chemistry Lab	_____ (1)
#CHEM 4554	Drug Chemistry	_____ (3)
#CHEM 4615	Physical Chemistry for the Life Sciences	_____ (3)
#CHEM 4616	Physical Chemistry for the Life Sciences	_____ (3)
NEUR 2464	Neuroscience and Society	_____ (3)
#NEUR 2594	Exploring Clinical Neuroscience	_____ (3)
#NEUR 3034	Global Perspectives in Neuroscience Pre-Departure	_____ (2)
#NEUR 3234	The Artificial Brain	_____ (3)
#NEUR 3594	Neurobiology of Psychiatric Disorders	_____ (3)
#NEUR 3774	Neuroendocrinology	_____ (3)
#NEUR 3844	Computational Neuroscience and Neural Engineering	_____ (3)
#NEUR 3914	Neuroscience of Drug Addiction	_____ (3)
#NEUR 3944	War and the Brain	_____ (3)
#NEUR 4034	Diseases of the Nervous System	_____ (3)
#NEUR 4314	Genetics in Neuroscience	_____ (3)
#NEUR 4364	Neuroscience of Language and Communication Disorders	_____ (3)

#NEUR 4454	Neuroeconomics *(cross-listed with ECON 4454 and PSYC 4454)*	_____ (3)
#NEUR 4514	Neuroimmunology in Health and Disease	_____ (3)
#NEUR 4594	Clinical Neuroscience in Practice	_____ (3)
#NEUR 4914	Drug Development in Neuroscience	_____ (3)
#NEUR 4994	Undergraduate Research *(may only be taken after one term of NEUR 2994)*	_____ (3)
#PHYS 4714	Introduction to Biophysics	_____ (3)
#PSYC 2044	Psychology of Learning	_____ (3)
#PSYC 2064	Introduction to Neuroscience of Behavior	_____ (3)
#PSYC 4044	Advanced Learning	_____ (3)
#PSYC 4064	Physiological Psychology	_____ (3)
#PSYC 4074	Sensation and Perception	_____ (3)
#PSYC 4114	Cognitive Psychology	_____ (3)
#STAT 4204	Experimental Designs	_____ (3)

5. Free Electives (14 credits)
Complete remaining credit hours to satisfy degree 120 credit hour requirement

_____ ( )

_____ ( )

_____ ( )

_____ ( )

_____ ( )

_____ ( )

Acceptable Substitutions

Required Course	Acceptable Substitution(s)
CHEM 1035-1036 series	CHEM 1055-1056 series General Chemistry for Majors
CHEM 1045-1046 series	CHEM 1065-1066 series General Chemistry Lab for Majors
CHEM 2535-2536 series	CHEM 2565-2566 series Principles of Organic Chemistry
CHEM 2545-2546 series	CHEM 2555-2556 series Org Syn Tech Lab
MATH 1025-1026 series	MATH 1225-1226 series Calculus of a Single Variable
MATH 1025-1026 series	MATH 1225-MATH 1026 series
NEUR 1004	Any University-approved First Year Experience Course
PHYS 2205, 2215	PHYS 2305 Foundations of Physics
PHYS 2206, 2216	PHYS 2306 Foundations of Physics
STAT 3615-3616 series	STAT 3005-3006 series

Notes:

- **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.
- **Foreign Language Requirement:** Students who did not successfully complete at least two units of a single foreign, classical, or sign language during high school must successfully complete 6 semester hours of a single foreign, classical, or sign language at the college level. Such credits are in addition to that number normally required for graduation in a student's program of study.
- [1]**Grade Requirements:** Students must earn a grade of "C-" or better in all core neuroscience coursework (CHEM 1035, CHEM 1036, NEUR 1004, NEUR 2025, NEUR 2026, NEUR 2035, NEUR 2036, NEUR 4044, PSYC 1004) or the equivalent coursework. Students must also earn a "C-" or better in BIOL 1105, BIOL 1106, BIOL 1115, BIOL 1116, MATH 1025, and MATH 1026.
- **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, 1106, 1115, 1116, MATH 1025, and MATH 1026.
- [#]**Prerequisites:** This check sheet contains courses that have at least one prerequisite that may or may not be included as part of this degree. Please see your advisor or consult the Undergraduate Course Catalog for more information.
- **Satisfactory Progress Towards Degree Policy**. The School of Neuroscience follows all Virginia Tech Satisfactory Academic Progress criteria as outlined in Policy 6305: https://policies.vt.edu/assets/6305.pdf.

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 EXPN major and do not apply across all School of Neuroscience majors.
- **Restricted Elective:** Restricted elective courses provide students the autonomy to select 12 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 EXPN 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).