NEUROSCIENCE, BS

Banner Code: SC-BS-NEUR

Academic Advising

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The bachelor of science in neuroscience is an interdisciplinary program emphasizing the relationship between the biology and chemistry of the nervous system and behavior of an organism. The BS in neuroscience prepares students for graduate-level study in both medical school and doctoral and master's-level programs in neuroscience and other health-related fields, and work in the neuroscience field.

Admissions & Policies

Admissions

University-wide admissions policies can be found in the Undergraduate Admissions Policies section of this catalog.

To apply for this program, please complete the George Mason University Admissions Application (https://www2.gmu.edu/admissions-aid/apply-now).

Policies

Students must fulfill all Requirements for Bachelor's Degrees, including the Mason Core.

NEUR 410 Current Topics in Neuroscience or NEUR 411 Seminar in Neuroscience fulfill the writing intensive requirement.

For policies governing all undergraduate programs, see AP.5 Undergraduate Policies.

Requirements

Degree Requirements

Total credits: minimum 120

Students should refer to the Admissions & Policies tab for specific policies related to this program.

Foundation Courses

Biology [1]		
BIOL 213	Cell Structure and Function (Mason Core)	4
Select one from the following: [2]		3-4
BIOL 311	General Genetics	
BIOL 326	Animal Physiology	
BIOL 425	Human Physiology	
BIOL 430	Advanced Human Anatomy and Physiology I	
BIOL 431	Advanced Human Anatomy and Physiology II	
Chemistry		
CHEM 211 & CHEM 213	General Chemistry I (Mason Core) and General Chemistry Laboratory I (Mason Core)	4
CHEM 212 & CHEM 214	General Chemistry II (Mason Core) and General Chemistry Laboratory II (Mason Core)	4
Mathematics		
Select one course (3 or 4 credits) from the following:		3-4
MATH 113	Analytic Geometry and Calculus I (Mason Core)	
MATH 114	Analytic Geometry and Calculus II [3]	
MATH 213	Analytic Geometry and Calculus III	
Statistics		
Select one course (3 or 4 credits) from the following:		3-4
BIOL 214	Biostatistics for Biology Majors	
STAT 250	Introductory Statistics I (Mason Core)	
PSYC 300	Statistics in Psychology	
MATH 352	Statistics	
Physics		
Select one of the following sequences:		8
PHYS 243 & PHYS 244 & PHYS 245 & PHYS 246	College Physics (Mason Core) and College Physics Lab (Mason Core) and College Physics (Mason Core) and College Physics Lab (Mason Core)	
PHYS 160 & PHYS 161 & PHYS 260 & PHYS 261	University Physics I (Mason Core) and University Physics I Laboratory (Mason Core) and University Physics II (Mason Core) and University Physics II Laboratory (Mason Core)	
Psychology [1,4]		
PSYC 100	Basic Concepts in Psychology (Mason Core)	3
PSYC 375	Brain and Sensory Processes	3
PSYC 376	Brain and Behavior	3
Computer Science		
CDS 130	Computing for Scientists (Mason Core)	3
Core Courses in Neuroscience [1]		
NEUR 327	Cellular, Neurophysiological, and Pharmacological Neuroscience	3
NEUR 335	Molecular, Developmental, and Systems Neuroscience	3
Technical Writing [1]		
NEUR 410	Current Topics in Neuroscience	3
or NEUR 411	Seminar in Neuroscience	
Required Psychology Lab Course [1]		
PSYC 373	Physiological Psychology Laboratory	1
Total Credits		51-54

[1] Students must earn a minimum grade of 1.67 (C-) in these courses. Either course fulfills the writing intensive requirement.

[2] The course chosen to fulfill this requirement cannot be applied to the 24 credits of approved neuroscience electives.

[3] Students intending to pursue a doctorate in neuroscience or a medical degree are advised to take MATH 114 Analytic Geometry and Calculus II.

[4] Transfer students who have earned transfer credit for PSYC 372 Physiological Psychology may substitute this course for PSYC 375 Brain and Sensory Processes.

Electives

Students should consult with an advisor to choose appropriate elective courses, which must be approved by the director of the program. A sample of possible electives is given below. Students may apply no more than 6 credits of courses with a grade of D to this requirement.

Students intending to pursue a doctorate in neuroscience or a medical degree are advised to take CHEM 313 Organic Chemistry I and CHEM 315 Organic Chemistry Lab I.

Select 24 credits from the following:		24
BENG 101	Introduction to Bioengineering	
BENG 313	Physiology for Engineers	
BIOL 305 & BIOL 306	Biology of Microorganisms and Biology of Microorganisms Laboratory	
BIOL 311	General Genetics	
BIOL 326	Animal Physiology	
BIOL 417	Selected Topics in Molecular and Cellular Biology (when topic is Foundations of the Mammalian Brain)	
BIOL 420	Vaccines	
BIOL 425	Human Physiology	
BIOL 430	Advanced Human Anatomy and Physiology I	
BIOL 431	Advanced Human Anatomy and Physiology II	
BIOL 452	Immunology	
BIOL 453	Immunology Laboratory	
BIOL 471	Evolution	
BIOL 483	General Biochemistry	
BIOL 484	Eukaryotic Cell Biology	
BIOL 515	Developmental Neurobiology	
CDS 301	Scientific Information and Data Visualization	
CHEM 313 & CHEM 315	Organic Chemistry I and Organic Chemistry Lab I	
CHEM 314 & CHEM 318	Organic Chemistry II and Organic Chemistry Lab II	
CHEM 321	Quantitative Chemical Analysis	
CHEM 333	Physical Chemistry for the Life Sciences I	
CHEM 334	Physical Chemistry for the Life Sciences II	
CHEM 463 & CHEM 465	General Biochemistry I and Biochemistry Lab	
CHEM 464	General Biochemistry II	
MATH 114	Analytic Geometry and Calculus II	
MATH 203	Linear Algebra	
MATH 213	Analytic Geometry and Calculus III	
MATH 214	Elementary Differential Equations	
NEUR 405	RS: Laboratory Methods in Behavioral Neuroscience	
NEUR 410	Current Topics in Neuroscience (when not used to fulfill the technical writing requirement) [1]	
NEUR 411	Seminar in Neuroscience [1]	
NEUR 440	Independent Study in Neuroscience	
NEUR 450	Honors Thesis Proposal	
NEUR 451	Honors Thesis	
PHYS 262	University Physics III (Mason Core)	
PHYS 263	University Physics III Laboratory (Mason Core)	
PSYC 304	Principles of Learning	
PSYC 309	Sensation, Perception, and Information Processing	
PSYC 317	Cognitive Psychology	
PSYC 472	Current Topics in Brain and Behavior	
Total Credits		24

[1] Fulfills the writing intensive requirement.

Mason Core and Elective Credits

In order to meet a minimum of 120 credits, this degree requires an additional 42-45 credits which may be applied toward any remaining Mason Core requirements (outlined below), Requirements for Bachelor's Degrees, and elective courses. Students are strongly encouraged to consult with their advisors to ensure that they fulfill all requirements.

Mason Core

Note: Some Mason Core requirements may already be fulfilled by the major requirements listed above. Students are strongly encouraged to consult their advisors to ensure they fulfill all remaining Mason Core requirements.

Code	Title	Credits
Foundation Requirements		
Written Communication		6
Oral Communication		3
Quantitative Reasoning		3
Information Technology		3-7
Core Requirements		
Arts		3
Global Understanding		3
Literature		3
Natural Science		7
Social and Behavioral Sciences		3
Western Civilization/World History		3
Synthesis/Capstone Requirement [1]		
Synthesis/Capstone		3
Total Credits		40

[1] minimum 3 credits

Honors

Honors in the Major

Highly-qualified students may apply to graduate with honors in the major.

Eligibility

To be eligible for admission, neuroscience majors must have completed at least 60 credits and have a minimum cumulative GPA of 3.25 and a minimum GPA of 3.25 in neuroscience courses.

Honors Requirements

If accepted, students must take a sequence of three courses, which culminates in the successful completion and presentation of an independent honors thesis.

Code	Title	Credits
NEUR 410	Current Topics in Neuroscience	3
or NEUR 411	Seminar in Neuroscience	
NEUR 450	Honors Thesis Proposal	2-3
NEUR 451	Honors Thesis	3-4
Total Credits		8-10

To graduate with honors, students must earn a minimum GPA of 3.50 in their honors courses, maintain a minimum cumulative GPA of 3.25, and complete an honors thesis.