Biological Sciences: Physiology and Neurobiology PHNB (0404E)

A minimum of 120 credits earned, and a 2.0 cumulative GPA is needed to meet University graduation requirements. Major courses (Basic, Supporting, and Advanced) require a C- or better in each and a 2.0 average GPA.

Basic Program: 14-16 credits

Credits	Basic Program Courses
3	BSCI160 Ecology and Evolution [1]
3	BSCI170 Molecular and Cellular Biology [1]
1-2	BSCI180 Principles of Biology Lab [1] **OR** BSCI161 **AND** BSCI171 [1]
3	BSCI207 Organismal Biology [2]
4	BSCI222 Principles of Genetics [2, 3]
1-2	CMNS100 [4] **OR** UNIV100 **OR** HLSC100 **OR** HACS100 **OR** HDCC105 **OR** HHUM105

Supporting Courses: 32 credits

Credits	Supporting Courses
3	CHEM131 General Chemistry I Lecture [1]
1	CHEM132 General Chemistry I Lab [1]
3	CHEM231 Organic Chemistry I Lecture [1]
1	CHEM232 Organic Chemistry I Lab [1]
3	CHEM241 Organic Chemistry II Lecture [2]
1	CHEM242 Organic Chemistry II Lab [2]
2	CHEM271 General Chemistry II Lecture [2]
2	CHEM272 General Chemistry II Lab [2]
8	MATH135 Discrete Mathematics [1] (4) **AND** MATH136 **OR** MATH140 Calculus [2] (4)
	OR MATH140 Calculus I [1] (4) **AND** MATH141 Calculus II [2] (4)
4	PHYS131 Physics I
4	PHYS132 Physics II

General Education Requirements: 40 credits minimum

For more information on General Education visit gened.umd.edu. Courses may double or triple count among DS, SC, and DV.

Fundamental Studies (FS)	Course
Math (MA)	MATH135 **OR** 140
Analytic Reasoning (AR)	MATH135 **OR** 140
Natural Sciences (NS)	BSCI160 **OR** 170
Natural Sciences Lab (NL)	BSCI180 w/ BSCI160 **OR** 170
Academic Writing (AW)	
Professional Writing (PW)	
Oral Communication (OC)	

Distributive Studies (DS)	Course
History and Social Sciences (HS)	
History and Social Sciences (HS)	
Humanities (HU)	
Humanities (HU)	
Scholarship in Practice (SP) [5]	
Scholarship in Practice (SP) out of major	

Signature Courses (SC)	Course
Big Question (IS)	
Big Question (IS)	

Diversity (DV)	Course
Understanding Plural Societies (UP)	
DVUP **OR** Cultural Competence (CC)	

Physiology and Neurobiology (PHNB) Advanced Program: 27 credits minimum

A minimum of 27 credits including at least:

- 13 credits of required courses
- 11 credits of area courses
- Three credits of enrichment
- Two courses designated as **Lab**

Please see page two for a list of specific courses and other details.

NOTE: The curriculum in Biological Sciences changes as our faculty improve the program. Any questions can be referred to your academic advisor or the Undergraduate Academic Programs Office by emailing BSCIque@umd.edu or calling 301-405-6892.

[1] Part of Benchmark One, see bsci.umd.edu/benchmarks
[2] Part of Benchmark Two, see bsci.umd.edu/benchmarks
[3] Students in ILS Honors should take HLSC322 instead of BSCI222.
[4] All BSCI majors must take CMNS100 or another approved freshman seminar during their first semester.
[5] Some BSCI courses have been approved to fulfill this Gen Ed requirement. See page 2 for details.

Physiology and Neurobiology (0404E) Advanced Program

27 credits, including two courses designated as **Lab**[6].

Required courses: 13 credits

Credits	Required Courses
3	BSCI331 Cell Biology & Physiology
1	BSCI332 Cell Biology & Physiology **Lab**
3	BSCI353 Cellular and Molecular Neuroscience
3	BSCI450 Mammalian Systems Physiology

Credits	Biochemistry Courses, Choose One
3	BCHM461 Biochemistry I
3	BCHM463 Biochemistry of Physiology

Area courses: 11 credits

PHNB Area Lectures

Credits	PHNB Area Lectures
3	BSCI343 Cell. Mech. of Aging and Disease
3	BSCI355 Neurobiology of Extraordinary Senses
3	BSCI357 Neuro. of Chemosensory Systems
3	BSCI360 Animal Behavior
3	BSCI370 Principles of Evolution
3	BSCI381 Molecular Neuroethology
3	BSCI401 Animal Communication
3	BSCI402 Genomics of Sensory Systems
3	BSCI403 Biology of Vision
3	BSCI404 Cell Biol. from a Biophysical Persp.
3	BSCI406 Membranes and Biological Interfaces
3	BSCI410 Molecular Genetics
3	BSCI416 Human Genetics (DSSP)
3	BSCI420 Cell Biology Lectures
3	BSCI422 Principles of Immunology
3	BSCI430 Developmental Biology
3	BSCI431 Origin & Evolution of Nervous Systems
3	BSCI433 Biology of Cancer
3	BSCI443 Microbial Physiology
3	BSCI446 Advanced Systems Neuroscience
3	BSCI447 Endocrinology
3	BSCI452 Diseases of the Nervous System
3	BSCI453 Biology of Hearing
3	BSCI456 Advanced Cellular Neuroscience
3	BSCI483 Insects, Pathogens, & Public Health
3	BCHM462 Biochemistry II
3	BCHM465 Biochemistry III

PHNB Area Labs (At least one)

Credits	PHNB Area Labs
4	BSCI374 Math. Modeling in Biology w/**Lab**
3	BSCI414 Recombinant DNA **Lab**
2	BSCI423 Immunology **Lab** [7]
4	BSCI424 Pathogenic Microbiology w/ **Lab**
2	BSCI425 Adv. Cell Biology **Lab** Practices [7]
4	BSCI435 Quantitative and Computational Biosciences w/ **Lab**
4	BSCI442 Plant Physiology w/**Lab**
2	BSCI451 Mammalian Systems Physiology **Lab** [7]
4	BSCI455 Neuroscience **Lab** [7] (DSSP)
1	BSCI484 Insects, Pathogens, & Public Hlth **Lab** [7]
3	BCHM464 Biochemistry **Lab**

Optional Statistics Area Course (no more than one)

Credits	Statistics Area Courses
3	BIOM301 Introduction to Biometrics
3	STAT400 Applied Probability & Statistics
3	STAT464 Introduction to Biostatistics

Additional Area Courses (Optional)

Credits	Additional PHNB Area courses
Var	BSCI328, 338, 339, 348, 439 Spec. Top. Courses [8]
1	BSCI378H, BSCI398H Dept Honors Seminars [9]

Enrichment: 3 credits

- **Three credits from *any* 300- or 400-level BSCI, CHEM, or BCHM course.** Area courses may be used to fulfill Enrichment if they are not used to satisfy the area credit requirement. Courses counted as Enrichment do not satisfy the Lab requirement.
- Three credits[9] of BSCI349 (Research Internship), BSCI359 (Teaching Practicum), or BSCI379, 389, or 399 (Departmental Research)[10] credit may be used. Independent study or research courses from other departments may be used with the permission of the department.

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[6] Multiple semesters in BSCI379, 389, or 399 research credits may fulfill one of the two required **Labs**. See ter.ps/reslabcredit for details.
[7] Requires a C- or better in the prerequisite or corequisite lecture to count as a **Lab** or to satisfy the course requirement.
[8] Special Topics courses allowed if specifically approved for Advanced Program in PHNB. See your advisor or Testudo for applicability.
[9] The maximum number of credits in these repeatable courses that may count towards the advanced program.
[10] A maximum of eight credits may count towards one or more undergraduate degrees, any additional research credits will be included in the total earned credits and factored into the GPA but **not** applied to any undergraduate degree.