

College of Agriculture and Life Sciences
Department of Biochemistry
Bachelor of Science in Biochemistry (BS)
Major - Biochemistry
For Student Date of Entry under University Course Catalog 2023-2024

PATHWAYS GENERAL EDUCATION REQUIREMENTS

Pathways General Education requirements and approved courses are available online: <https://www.pathways.prov.vt.edu/students-and-advisors/pathways-guides.html>.

	(credit hours in parentheses)	
Foundational Discourse (Concept 1f: 6 credits) (ENGL 1105-1106 First-Year Writing)	(3) _____	(3) _____
Advanced/Applied Discourse (Concept 1a: 3 credits) (Select from approved Pathways courses)	(3) _____	
Critical Thinking in the Humanities (Concept 2: 6 credits) (Select from approved Pathways courses)	(3) _____	(3) _____
Reasoning in the Social Sciences (Concept 3: 6 credits) (Select from approved Pathways courses)	(3) _____	(3) _____
Reasoning in the Natural Sciences (Concept 4) (Area fulfilled by BIOL 1105 and BIOL 1106)		
Foundational Quantitative and Computational Thinking (Concept 5f) (Area fulfilled by MATH 1025 and MATH 1026)		
Advanced/Applied Quantitative and Computational Thinking (Concept 5a) (Area fulfilled by STAT 3615)		
Critique and Practice in the Arts (Concept 6a: 3 credits) (Select from approved Pathways courses)	(3) _____	
Critique and Practice in Design (Concept 6d: 3 credits) (Select from approved Pathways courses)	(3) _____	
Critical Analysis of Identity and Equity in the United States (Concept 7: 3 credits)* (Select from approved Pathways courses)		(3) _____

*Concept 7 course may also be used to fulfill part of Concept 2 or Concept 3 requirement.

Pathways credit hour requirement:

30 credits

COLLEGE AND DEPARTMENT REQUIREMENTS

* indicates course with prerequisite(s) or corequisite(s). Always check the Undergraduate Catalog for the most current prerequisite and corequisite information.

Degree Core (21 credits):

BCHM 1014	Biochem First Year Experience	(1) ___	
BCHM 2354*	Biochemical Techniques	(3) ___	
BCHM 2364*	Biochemical Techniques Laboratory	(1) ___	
BCHM 4115-4116*	General Biochemistry	(4) ___	(3) ___
BCHM 4124*	Laboratory Problems in Biochemistry and Molecular Biology	(6) ___	
BIOL 2004*	Genetics	(3) ___	

Major Requirements (52-53 credits):

BIOL 1105-1106	Principles of Biology	(3) ___	(3) ___
BIOL 1115-1116*	Principles of Biology Laboratory	(1) ___	(1) ___
BIOL 2604*	General Microbiology	(3) ___	
BIOL 2614*	General Microbiology Laboratory	(2) ___	
CHEM 1035-1036	General Chemistry	(3) ___	(3) ___
CHEM 1045-1046	General Chemistry Laboratory	(1) ___	(1) ___
CHEM 2535-2536*	Organic Chemistry	(3) ___	(3) ___
CHEM 2545-2546*	Organic Chemistry Laboratory	(1) ___	(1) ___
MATH 1025-1026	Elementary Calculus	(3) ___	(3) ___
PHYS 2205-2206*	General Physics	(3) ___	(3) ___
PHYS 2215-2216*	General Physics Laboratory	(1) ___	(1) ___
STAT 3615*	Biological Statistics	(3) ___	

Select **two** courses from the following:

BCHM 3634*	Analysis of Biochemical Literature (3)
BCHM 4054 (APSC 4054)*	Genomics (3)
BCHM 4354*	Biochemical Communication (3)
BCHM 4554*	Biophysics for Biochemistry (3)
BCHM 4784*	Applications in Molecular Life Science (3)
BCHM 5024*#	Computational Biochemistry for Bioinformatics (3)
BCHM 5224*#	Protein Structure and Function (3)
BIOL 4624*	Microbial Genetics (3)
BIOL 4884*	Cell Biology (3)
CHEM 4615*	Physical Chemistry for the Life Sciences (3)
CHEM 4616*	Physical Chemistry for the Life Sciences (3)
PPWS 4114*	Microbial Forensics and Biosecurity (3)
SYSB 3035*	Genomics and Bioinformatics (4)

(6 - 7) ___

#Students in their senior year with a 3.0 or better GPA, may enroll in 5000-level courses satisfying undergraduate degree requirements within their department with the permission of the course instructor and the department head.

Free electives:	16-17 credits
College and Department credit hour requirement:	73-74 credits
Pathways General Education requirement:	30 credits
Total to complete degree:	120 credits

***Prerequisites:** This checksheet contains no hidden prerequisites, although some courses listed are prerequisites for other courses. Consult the Undergraduate Catalog for the most current prerequisite and corequisite information.

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 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.

Satisfactory Progress Toward Degree:

- (1) After having attempted 36 semester credits (including transfer, advanced placement, advanced standing, credit by examination and course withdrawal hours), students must have completed at least 12 semester credits of the Pathways General Education.
- (2) After having attempted 72 semester credits (including transfer, advanced placement, advanced standing, credit by examination and course withdrawal hours), students must have completed at least 24 semester credits of the Pathways General Education.
- (3) After having attempted 72 semester credits (including transfer, advanced placement, advanced standing, credit by examination and course withdrawal hours), students:
 - a. Must have an in-major grade point average of 2.0 or greater; and
 - b. Must have completed: BCHM 2354; BCHM 2364; BIOL 1105-1106; BIOL 1115-1116; BIOL 2004; CHEM 1035-1036; CHEM 1045-1046; CHEM 2535-2536; CHEM 2545-2546; PHYS 2205-2206; PHYS 2215-2216.

Credit hours and GPA requirements: Graduation requires completion of a minimum of 120 credit hours with a GPA of 2.0 or greater for all hours attempted. In addition, students must have an in-major GPA of 2.0 or greater. **The following courses are used to calculate the in-major GPA (students must earn a grade of C- or better in each of these courses or their approved substitutions):**

BCHM: 2354, 2364, 4115, 4116, 4124

BIOL: 1105, 1106, 1115, 1116, 2004, 2604, 2614

CHEM: 1035, 1036, 1045, 1046, 2535, 2536, 2545, 2546

Courses from the "Select two" list under the "Major Requirements" section

Approved Course Substitutions:

For CHEM 1035-1036: CHEM 1055-1056 or CHEM 1055H-1056H (General Chemistry for Majors)

For CHEM 1045-1046: CHEM 1065-1066 (General Chemistry Laboratory for Majors)

For CHEM 2535-2536: CHEM 2565-2566 (Principles of Organic Chemistry)

For ENGL 1105-1106: COMM 1015-1016 (Communication Skills)

For ENGL 1106: ENGL 1204H (Honors Freshman English)

For STAT 3615: STAT 3005 (Statistical Methods)

For CHEM 4615-4616: CHEM 3615-3616 (Physical Chemistry for Majors)

For MATH 1025-1026: MATH 1225-1226 (Calculus of a Single Variable)

For PHYS 2205-2206 and PHYS 2215-2216: PHYS 2305-2306 (Foundations of Physics)