BIOCHEMISTRY B.S. (Sample Plan of Study)
(for students following requirements in the 2023-24 General Bulletin or later)
(123 total credit hours required for graduation)

First Year – Fall

Course Number	Course Topic	Hours
BIOC 101	Biochemistry introduction	1
BIOL 214	Biology I	3
BIOL 214L	Biology I lab	1
CHEM 105 (or CHEM 111)	Chemistry 1	3 (or 4)
CHEM 113	Chemistry lab	2
MATH 121	Calculus I	4
Academic Inquiry, Breadth, or Elective course[1]		3
	Total	17 (or 18)

First Year – Spring

BIOL 215	Biology II	3
BIOL 215L	Biology II lab	1
CHEM 106 (or ENGR 145)	Chemistry II	3
MATH 122 (or MATH 124)	Calculus II	4
PHYS 121 (or PHYS 123)	Physics I: mechanics	4
Academic Inquiry, Breadth, or Elective course[1]		3
	Total	18

Second Year – Fall

Course Number	Course Topic	Hours
CHEM 223 (or CHEM 323)	Organic chemistry I	3
CHEM 233	Organic chemistry I lab	2
PHYS 122 (or PHYS 124)	Physics II: electricity and magnetism	4
ENGR 131 (or CSDS 132)	Computer programming introduction	3
Breadth or Elective course[1]		3
	Total	15

Second Year – Spring

CHEM 224 (or CHEM 324)	Organic chemistry II	3
CHEM 234	Organic chemistry II lab	2
STAT 312 (or STAT312R/313)	Basic statistics	3
Breadth or Elective course[1]		3
Open Elective course[3] (e.g. to complete a minor)		3
	Total	14

Third Year – Fall

Course Number	Course Topic	Hours
BIOC 307	Biochemistry I: molecules and pathways	4
BIOC Approved Technical Elective or Core Course[2]		3
Breadth or Elective course[1]		3
Open Elective course[3] (e.g. to complete a minor)		3

BIOCHEMISTRY B.S. (Required Courses by Subject)
(for students following requirements in the 2023-24 General Bulletin or later)

Course Number	Course Name/Category		Hours	
BIOC 101	Frontiers in Biochemistry		1	
BIOC 307	Introduction to Biochemistry		4	
BIOC 308	Molecular Biology		4	
Two of these three Biochemistry Core courses:			6	
BIOC 312	Proteins and Enzymes	(3)		
BIOC 334	Structural and Computational Biology	(3)		
BIOC 350	Molecular Basis of Cancer	(3)		
BIOC 391	Research Project		3	
BIOC 373	Biochemistry SAGES Seminar		3	
BIOC 393	Senior Capstone Experience		3	
Three Approved Technical Elective courses			9	BIOC total: 33
BIOL 214	Genes, Evolution and Ecology		3	
BIOL 214L	Genes, Evolution and Ecology Lab		1	
BIOL 215	Cells and Proteins		3	
BIOL 215L	Cells and Proteins Lab		1	BIOL total: 8
CHEM 105	Principles of Chemistry I		3	
(or CHEM 111	Principles of Chemistry for Engineers		4)	
CHEM 106	Principles of Chemistry II		3	
(or ENGR 145	Chemistry of Materials)			
CHEM 113	Principles of Chemistry Lab		2	
CHEM 223	Introductory Organic Chemistry I		3	
(or CHEM 323	Organic Chemistry 1)			
CHEM 233	Introductory Organic Chemistry Laboratory I		2	
CHEM 224	Introductory Organic Chemistry II		3	
(or CHEM 324	Organic Chemistry 1I)			
CHEM 234	Introductory Organic Chemistry Laboratory II		2	CHEM total:18 (or 19)
MATH 121	Calculus for Science and Engineering 1		4	
MATH 122	Calculus for Science and Engineering II		4	
(or MATH 124	Calculus II)			MATH total: 8
PHYS 121	General Physics I - Mechanics		4	
(or PHYS 123	Physics and Frontiers 1 - Mechanics)			
PHYS 122	General Physics 1I - Electricity and Magnetism		4	
(or PHYS 124	Physics and Frontiers 1I - Electricity and Magnetism)			PHYS total: 8
ENGR 131	Elementary Computer Programming		3	
(or CSDS 132	Programming in Java)			
STAT 312	Basic Statistics for Engineering and Science		3	
(or STAT 312R	Basic Statistics for Engineering and Science Using R			
or STAT 313	Statistics for Experimenters)			

BIOCHEMISTRY B.S. (Courses Required for Optional Tracks)
(for students following requirements in the 2023-24 General Bulletin or later)

Track/Concentration	Required Core course	Two Required Technical Elective courses
Cancer Biology	BIOC 350	BIOC 353 Biochemical Pathways in Cancer Therapeutics BIOC 360 Advanced Technologies for Cancer Research
Infectious Disease	BIOC 334	BIOC 310 Microbial Physiology and Therapeutic Opportunities BIOC 311 Antimicrobial Therapies and Resistance
Metabolism	BIOC 312	Two of BIOC 315 Biological Membranes and Their Proteins BIOC 344 Molecular Endocrinology BIOC 345 Metabolic Dysregulation and Human Disease
Computational Health Science*	BIOC 334	PQHS 431 Statistical Methods I PQHS 457 Current Issues in Genetic Epidemiology

(* requires approval by the Biochemistry Undergraduate Program Director)

Freshmen may apply for the Research Honors Track/Concentration early in spring semester of their first year. This track requires completion of the following courses:

BIOC 285	Honors Readings in Biochemistry	(fall of sophomore year)
BIOC 391	Research Project	(2 semesters)
BIOC 393H	Biochemistry Honors Seminar Capstone	(in place of BIOC 393)