MAJOR IN BIOCHEMISTRY, ASBMB CONCENTRATION

Requirements
Effective Fall 2023

A minimum grade of C (2.000) must be earned for BC 493 and all biochemistry (BC) and LIFE subject code lecture and laboratory courses at or above the 200-level required in the biochemistry major.

Freshman

		AUCC	Credits
BC 192	Biochemistry Freshman Seminar		2
CHEM 111	General Chemistry I (GT-SC2)	3A	4
CHEM 112	General Chemistry Lab I (GT-SC1)	3A	1
CHEM 113	General Chemistry II		3
CHEM 114	General Chemistry Lab II		1
CO 150	College Composition (GT-CO2)	1A	3
LIFE 102	Attributes of Living Systems (GT-SC1)	3A	4
LIFE 201B	Introductory Genetics: Molecular/Immunological/Developmental (GT-SC2)	3A	3
LIFE 203	Introductory Genetics Laboratory		2
Select one group from the following:			8
Group A:			
MATH 155	Calculus for Biological Scientists I (GT-MA1)	1B	
MATH 255	Calculus for Biological Scientists II	1B	
Group B:			
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	
	Total Credits		**31**

Sophomore

CHEM 341	Modern Organic Chemistry I		3
CHEM 343	Modern Organic Chemistry II		3
CHEM 344	Modern Organic Chemistry Laboratory		2
LIFE 210	Introductory Eukaryotic Cell Biology		3
LIFE 212	Introductory Cell Biology Laboratory		2
Select one course from the following:			5
PH 121	General Physics I (GT-SC1)	3A	
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	
AUCC Category 3 courses (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#Foundations-Perspectives)[1]		3B-3D	6
Bioscience Elective (see list below)			3
Elective			3
	Total Credits		**30**

Junior

BC 360	Responsible Conduct in Biochemical Research		1
BC 401	Comprehensive Biochemistry I	4A	3
BC 403	Comprehensive Biochemistry II	4B	3
BC 404	Comprehensive Biochemistry Laboratory	4B	2
Select one course from the following:			5

PH 122	General Physics II (GT-SC1)	3A	
PH 142	Physics for Scientists and Engineers II (GT-SC1)	3A	
Select one course from the following:			3
STAT 301	Introduction to Applied Statistical Methods		
STAT 307	Introduction to Biostatistics		
STAT 315	Intro to Theory and Practice of Statistics		
Bioscience Elective (see list below)			3
Advanced Writing (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#advanced-writing)		2	3
Diversity, Equity, and Inclusion (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#diversity-equity-inclusion)		1C	3
Electives			3
	Total Credits		**29**
Senior			
BC 411	Physical Biochemistry		4
BC 463	Molecular Genetics		3
BC 465	Molecular Regulation of Cell Function		3
BC 493	Senior Seminar	4A,4C	1
BC 499A or 499B	Thesis: Laboratory Research-Based Thesis: Literature Based	4C	3
Bioscience Elective (see list below)			3
AUCC Category 3 courses (http://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#Foundations-Perspectives)[1]		3B-3D	6
Electives[2]			7
	Total Credits		**30**
	Program Total Credits:		**120**

Biosciences Electives List – Select a minimum of 9 credits in consultation with advisor

A minimum of 3 credits must be selected from Group A; a maximum of 6 credits may be selected from group B; a maximum of 3 credits may be selected from Group C.

Code	Title	Credits
Group A – Select 3-9 credits from the following:		
BMS 300	Principles of Human Physiology	4
BMS 301	Human Gross Anatomy	5
BMS 305	Domestic Animal Gross Anatomy	4
BMS 330	Microscopic Anatomy	4
BMS 345	Functional Neuroanatomy	4
BMS 360	Fundamentals of Physiology	4
BMS 420	Cardiopulmonary Physiology	3
BMS 430	Endocrinology	3
BMS 450	Pharmacology	3
BMS 500	Mammalian Physiology I	4
ERHS 332	Principles of Epidemiology	3
FSHN 350	Human Nutrition	3
HES 319	Neuromuscular Aspects of Human Movement	4
HES 403	Physiology of Exercise	3
VS 331	Histology	4
Group B – Select 0-6 credits from the following:		
BC 467	Biochemistry of Disease	3
BIOM 306/BTEC 306	Bioprocess Engineering	4
BIOM 504/CBE 504	Fundamentals of Biochemical Engineering	3
BMS 325	Cellular Neurobiology	3
BMS 405	Nerve and Muscle-Toxins, Trauma and Disease	3
BSPM 462/BZ 462/ MIP 462	Parasitology and Vector Biology	5
BZ 220	Introduction to Evolution	3
BZ 311	Developmental Biology	4
BZ 360	Bioinformatics and Genomics	4
BZ 401	Comparative Animal Physiology	3
BZ 440	Plant Physiology	3
BZ 455	Human Heredity and Birth Defects	3
BZ 476/BZ 576	Genetics of Model Organisms	3
CHEM 334	Quantitative Analysis Laboratory	1
CHEM 335	Introduction to Analytical Chemistry	3
CHEM 433	Clinical Chemistry	3
ERHS 450	Introduction to Radiation Biology	3
FSHN 470	Integrative Nutrition and Metabolism	3
FTEC 350	Fermentation Microbiology	3
FTEC 460	Brewing Science II	5
MIP 300	General Microbiology	3
MIP 302	General Microbiology Laboratory	2
MIP 342	Immunology	4
MIP 343	Immunology Laboratory	2

MIP 351	Medical Bacteriology	3
MIP 352	Medical Bacteriology Laboratory	3
MIP 420	Medical and Molecular Virology	4
MIP 425	Virology and Cell Culture Laboratory	2
MIP 443	Microbial Physiology	4
MIP 450	Microbial Genetics	3
NB 501	Cellular and Molecular Neurophysiology	2
Group C – Select 0-3 credits from the following:		
BC 406A	Investigative Biochemistry: Protein Biochemistry	2
BC 475	Mentored Research	3
BC 487A	Internship	Var.
BC 495	Independent Study	Var.
BC 496	Group Study	Var.

[1] Select from the list of courses in categories 3B-3D (six credits [two courses] must come from 3B; one course each from categories 3C and 3D) in the AUCC. Only 3 of the 6 credits required for Arts and Humanities may come from intermediate (L*** 200 and L*** 201) foreign language courses.

[2] Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).