

B.S. IN CHEMISTRY WITH A CONCENTRATION IN BIOCHEMISTRY (CE.BY.BS)

Code	Title	Credits
Major Requirements/Chemistry (24 credits)^{1,2}		
CE-111	General Chemistry I	3
CE-111L	General Chemistry Laboratory I	1
CE-112	General Chemistry II	3
CE-112L	General Chemistry Laboratory II	1
CE-241	Organic Chemistry I	3
CE-241L	Organic Chemistry Laboratory I	2
CE-242	Organic Chemistry II	3
CE-242L	Organic Chemistry Laboratory II	2
CE-311	Chemical Literature	1
CE-342	Physical Chemistry II	3
CE-342L	Physical Chemistry II Laboratory	1
<i>(Chemistry courses satisfy Natural Science (NS) in General Education)</i>		
CE-410	Seminar	1
<i>(Satisfies Reasoned Oral Discourse (RD) in General Education)</i>		
Concentration Requirements/Biochemistry (18 credits)		
CE-331	Biochemistry I	3
CE-331L	Biochemistry I Laboratory	1
CE-332	Biochemistry II	3
CE-225	Bioanalytical Chemistry	3
CE-225L	Bioanalytical Chemistry Laboratory	2
Select 2 of the following:		
CE-452	Advanced Organic Chemistry	3
CE-486	Medicinal Chemistry	3
CE-401	Advanced Inorganic Chemistry (Co-requisite Lab CE-401L)	3
CE-475	Computational Chemistry and Molecular Modeling	3
CE-350	Research in Chemistry	1-4
MA-151	Statistics with Applications	3
Interdisciplinary Requirements (25 credits)		
BY-110	Introduction to Cell and Molecular Biology	4
MA-125	Calculus with Analytic Geometry I	4
MA-126	Calculus with Analytic Geometry II	4
<i>(MA-125 or MA-126 satisfy Mathematics in General Education)</i>		
PH-211	General Physics with Calculus I	4
PH-211L	General Physics with Calculus Laboratory I	1
PH-212	General Physics with Calculus II	4
PH-212L	General Physics with Calculus Laboratory II	1
Select 1 of the following courses:		
BY-216	Introduction to Genetics	3
BY-223	General Microbiology	3
BY-370	Cell Biology	3

BY-410	Molecular Biology	3
Free Electives (20 credits)³		
Select up to 20 credits of free electives ³		20
General Education Requirements (33 credits)⁴		
Complete 33 credits as outlined on the General Education table ⁴		33
Total Credits		120

1

By appropriate choice of required and free electives, students in this Concentration can meet the requirements for American Chemical Society Certification. It would be necessary to take CE-401 Advanced Inorganic Chemistry (3 cr.) and CE-401L Advanced Inorganic Chemistry Laboratory (1 cr.) and two (2) courses from the following list:

CE-322 Analytical Chemistry II Instrumental Analysis (3 cr.);

CE-325 NMR Spectroscopy (3 cr.);

CE-341 Physical Chemistry I (3 cr.);

CE-405 Methods of Inorganic Chemistry (3 cr.);

CE-452 Advanced Organic Chemistry (3 cr.);

CE-475 Computational Chemistry and Molecular Modeling (3 cr.);

CS-486 Medicinal Chemistry;

and an additional four (4) credits of laboratory courses, which may include CE-350 Research in Chemistry (1-4 cr.). This should be discussed with your advisor or the department chair.

2

Students who major in this concentration cannot also major in the Advanced Chemistry Concentration.

3

Please consult with your advisor regarding the required number of free electives that must be completed.

4

The General Education curriculum requires the completion of 45 credits. However, students may be able to share credits from within their major or interdisciplinary requirements. Please consult with your advisor to determine which General Education (<http://catalog.monmouth.edu/undergraduate-catalog/academic-programs-support-services-regulations/general-education-requirements/>) courses must be completed.

Notes

- 54 credits must be completed at the 200 level or higher.

B.S. in Chemistry with a Concentration in Biochemistry Sequence Chart

First Year		Credits	
Fall	Credits	Spring	Credits
CE-111 General Chemistry I	3	CE-112 General Chemistry II	3
CE-111L General Chemistry Laboratory I	1	CE-112L General Chemistry Laboratory II	1
IT-102 Information Technology for Scientists	3	MA-126 Calculus with Analytic Geometry II	4
MA-125 Calculus with Analytic Geometry I	4	BY-110 Introduction to Cell and Molecular Biology	4
EN-101 College Composition I	3	EN-102 College Composition II	3
Semester Credits	14	Semester Credits	15

Second Year

Fall	Credits	Spring	Credits
CE-241 Organic Chemistry I	3	CE-242 Organic Chemistry II	3
CE-241L Organic Chemistry Laboratory I	2	CE-242L Organic Chemistry Laboratory II	2
PH-211 General Physics with Calculus I	4	CE-225 Bioanalytical Chemistry	3
PH-211L General Physics with Calculus Laboratory I	1	CE-225L Bioanalytical Chemistry Laboratory	2
		PH-212 General Physics with Calculus II	4
Gen*Ed Social Science	3	PH-212L General Physics with Calculus Laboratory II	1
Gen*Ed Historical Persp or Social Science	3		
Semester Credits	16	Semester Credits	15

Third Year

Fall	Credits	Spring	Credits
CE-331 Biochemistry I	3	CE-342 Physical Chemistry II	3
CE-331L Biochemistry I Laboratory	1	CE-342L Physical Chemistry II Laboratory	1
Chemistry Elective (See Curriculum Chart)	4	CE-332 Biochemistry II	3
Gen*Ed Historical Perspectives	3	Gen*Ed Literature	3
Gen*Ed Aesthetics	3	CE-410 Seminar	1
CE-311 Chemical Literature	1	Gen*Ed Cultural Diversity or Global Understanding	3
		Free Electives	3
Semester Credits	15	Semester Credits	17

Fourth Year

Fall	Credits	Spring	Credits
Biology Elective (See Curriculum Chart)	3	Chemistry Elective (See Curriculum Chart)	3
Gen*Ed World Language	3	Gen*Ed Interdisciplinary Perspectives	3
Free Electives	9	Free Electives	7
Semester Credits	15	Semester Credits	13

Total Credits 120