BIOCHEMISTRY, BS, CERTIFIED BY THE AMERICAN CHEMICAL SOCIETY

Code	Title	Units
General Education Requirements		
Subject Area 1A: English Composition		3
Subject Area 1B: Critical Thinking		3
Subject Area 1C: Oral Communication		3
Subject Area 2: Mathematical Concepts & Quantitative Reasoning [1]		0
Subject Area 3A: Arts		3
Subject Area 3B: Humanities		3
Upper Division 3 Arts or Humanities: (3UD)		3
Subject Area 4: Social and Behavioral Sciences		3
Upper Division 4 Social and Behavioral Sciences: (4UD)		3
Subject Area 5A: Physical Science [1]		0
Subject Area 5B: Biological Sciences [1]		0
Subject Area 5C: Laboratory [1]		0
Upper Division 5 Science: (5UD) [2]		0
Subject Area 6: Ethnic Studies		3
General Education Subtotal		*27*
Campus Requirements		
First-Year Seminar (FYS)		2
American Institutions: Government		3
American Institutions: History		3
Junior Year Diversity & Reflection (JYDR)		3
Graduation Writing Assessment Requirement (GWAR) [1]		0
Capstone [1]		0
Campus Requirement Subtotal		*11*
Major Requirements		
Core Requirements		
Lower Division		
CHEM 1000	Foundations of Chemistry	3
CHEM 1001	Foundations of Chemistry Laboratory	2
CHEM 1100	Foundations of Analytical Chemistry	2
CHEM 1600	Foundations of Physical Chemistry	2
CHEM 2300	Foundations of Organic Chemistry	3
CHEM 2400	Foundations of Biochemistry	2
CHEM 2940	Research Methods in Biochemistry ([Satisfies 5A])	2
Upper Division		
CHEM 3300	Intermediate Organic Chemistry	3
CHEM 3301	Organic Chemistry Laboratory I	2
CHEM 3400	Biochemistry of Metabolic Pathways	2
CHEM 3401	Biochemistry Laboratory I	2
CHEM 3600	Physical Chemistry:Thermodynamics and Kinetics	3
CHEM 3948	Seminar in Biochemical Literature	3
CHEM 4400	Biochemistry of Nucleic Acids	2
CHEM 4948	Senior Seminar in Biochemistry ([Satisfies Capstone])	3
Cognates		
Biology		
Complete 8 Units Satisfies 5A and 5C		8
BIOL 2010	Introductory Biology - Cells	4
BIOL 2110	Introductory Biology - Animals	4
or BIOL 2120	Introductory Biology - Plants	
Mathematics		
Completed 8 units Satisfies 2		
Choose on of the following sequences:		8
MATH 2010 & MATH 2020	Calculus for the Biological and Chemical Sciences I and Calculus for Biological & Chemical Sciences II (OR)	
MATH 2310 & MATH 2320	Single Variable Calculus I for Engineers and Single Variable Calculus II for Engineers (OR)	
MATH 2510 & MATH 2520	Single Variable Calculus I and Single Variable Calculus II	
Additional Requirements for the B.S. in Biochemistry Certified by the American Chemical Society		
Lower Division Courses (6 units)		
CHEM 2110	Foundations of Quantitative Chemical Analysis	3
CHEM 2240	Foundations of Bioinorganic Chemistry	3
Upper Division Courses (12 units)		
CHEM 3310	Advanced Organic Chemistry	2
CHEM 4100	Chemical Separations	1
CHEM 4101	Chemical Separations Laboratory	1
CHEM 4110	Spectroscopy	1
CHEM 4120	Nuclear Magnetic Resonance	1
CHEM 4121	Spectroscopy Laboratory	1
CHEM 4401	Biochemistry Laboratory II	2
CHEM 4800	Honors Research	3
3 additional units selected from the following list:		3
CHEM 3110	Advanced Quantitative Chemical Analysis	
CHEM 3311	Organic Chemistry Laboratory II	
CHEM 3500	Concepts of Food Analysis	
CHEM 3510	Food Science	
CHEM 3610	Physical Chemistry: Quantum and Statistical Mechanics	
CHEM 4200	Inorganic Chemistry	
CHEM 4410	Protein Chemistry	
CHEM 4500	Food Chemistry	
CHEM 4510	Advanced Nutrition and Metabolism	
Major Subtotal		*81*
Additional Units Needed Towards Graduation		**1**
Total Units		**120**

[1] Satisfied in Major or cognate.

[2] Students are waived from the Upper Division area of their program.

[3] American Institution - Government (American & Constitutional Ideals) satisfies one course of the two required in Subject Area 4.