

## Bachelor of Science - Biochemistry and Molecular Biology Requirements (BIOC)

79-82 credits

Biology (18 credits; 10 upper-level)	Pre-Requisites	Credits	Semesters Offered	Semester Taken	Grade
BIOL 141 - Foundations of Biology: Cells, Energy & Organisms*	MATH150 or equiv (co-req)	4	FSZ		
BIOL 142 - Foundations of Biology: Ecology and Evolution*	MATH150 or equiv (co-req)	4	FSZ		
BIOL 302 - Molecular and General Genetics*	BIOL141; BIOL 142; CHEM 101; CHEM 102 (co-req)	4	FSZ		
BIOL 303 - Cell Biology	BIOL302; CHEM102	4	FS		
BIOL 300L - Experimental Biology Laboratory	BIOL302; CHEM102; CHEM102L	2	FS		
<b>Chemistry (27-28 credits; 17-18 upper-level)</b>					
CHEM 101 - Principles of Chemistry I*	MATH 150 recommended	4	FSZ		
CHEM 102 - Principles of Chemistry II*	CHEM 101	4	FSZ		
CHEM 102L - Introductory Chemistry Lab I*	CHEM 101; 102 (pre-/co-req)	2	FSZ		
CHEM 300 - Analytical Chemistry	CHEM 102; CHEM 102L	4	FS		
CHEM 301 - Physical Chemistry I	CHEM 102; MATH 152; PHYS 122 (pre-/co-req)	4	F		
<i>OR</i>					
CHEM 303 - Physical Chemistry for the Biochemical Sciences	CHEM 102; CHEM 351; MATH 152; PHYS 112/122 (pre-/co-req) or instructor's perm.	3	S		
CHEM 351 - Organic Chemistry I*	CHEM 102	3	FS		
CHEM 351L - Organic Chemistry Lab I*	CHEM 102L; 351 (pre-/co-req)	2	FS		
CHEM 352 - Organic Chemistry II*	CHEM 351	3	FS		
CHEM 352L - Organic Chemistry Lab I*	CHEM 351; 352 (pre-/co-req)	2	FS		
<b>Biochemistry (12 credits; all upper-level)</b>					
CHEM 437 - Comprehensive Biochemistry I*	CHEM 352	4	F		
CHEM 437L -Biochemistry Laboratory*	CHEM 300; CHEM 352L CHEM 437 (pre-/co-req)	4	FS		
CHEM 438 - Comprehensive Biochemistry II*	CHEM 437	4	S		
<b>Upper-Level Electives (list on reverse side of this sheet) (6-8 credits; all upper-level)</b>					
<b>Physics and Math (16 credits)</b>					
MATH 151 - Calculus & Analytical Geometry I*	MATH 150	4	FSZ		
MATH 152 - Calculus & Analytical Geometry II*	MATH 151	4	FSZ		
PHYS 121 - Introductory Physics I*	MATH 151	4	FSZ		
PHYS 122 - Introductory Physics II	PHYS 121; MATH 152	4	FSZ		
<b>Individual lab research 1-4 credits (recommended)</b> Students have the opportunity to integrate what they have learned by doing research with participating faculty. Those working with a Biological Sciences faculty member may register for BIOL 399 or 499. Those working in a Chemistry and Biochemistry departmental faculty laboratory may register for CHEM 399 or 499.					

\* These courses must be completed with a grade of C or better. All courses that students take as pre-requisites for other courses must be passed with a C or better. An overall C average must be maintained in required major courses.

F = Fall, S = Spring, Z = Summer. Courses marked with a "Z" have been taught in the Summer in recent years; **there is no guarantee that they will be offered every Summer**

**Electives List (from the 2004-2006 General Catalog with additional approved courses):**

BIOL 411 - Bacterial Physiology  
BIOL 414 - Eukaryotic Genetics & Molecular Biology  
BIOL 418 - Human Molecular Biology  
BIOL 420 - Advanced Topics in Cell Biology  
BIOL 425 - Immunology  
BIOL 426 - Approaches to Molecular Biology  
BIOL 428 - Computer Applications in Molecular Biology  
BIOL 434 - Microbial Molecular Genetics  
BIOL 443 - Advanced Topics in Developmental Biology  
BIOL 444 - Development and Cancer  
BIOL 445 - Signal Transduction  
BIOL 451 - Neurobiology  
BIOL 454 - Vision Science  
BIOL 456 - Plant Molecular Biology  
BIOL 476 - Antibiotics: Origin, Mechanism, Resistance  
BIOL 483 - Evolution: From Genes to Genomes  
BIOL 486 - Genome Science  
CHEM 406 - Bioinorganic Chemistry  
CHEM 431 - Chemistry of Proteins  
CHEM 432 - Advanced Biochemistry  
CHEM 433 - Biochemistry of Nucleic Acids  
CHEM 435/635 - Biochemistry of Complex Carbohydrates  
CHEM 441 - Physical Chemistry of Macromolecules  
CHEM 442 - Physical Biochemistry  
CHEM 443 - Spectroscopy of Biopolymers  
CHEM 444 - Molecular Modeling  
CHEM 450 - Chemistry of Heterocyclic Compounds  
CHEM 451 - Mechanisms of Organic Reactions  
CHEM 453 - Organic Chemistry of Nucleic Acids  
CHEM 455 - Biomedical Chemistry  
CHEM 457 - Total Synthesis of Natural Products  
CHEM 461 - Advanced Instrumental Methods of Analysis  
CHEM 470 - Toxicological Chemistry  
CHEM 472 - Enzyme Reaction Mechanisms  
CHEM 490A - Special Topics in Chemistry\*\*  
CHEM 601 - Special Topics in Chemistry\*\*  
CHEM 601 - Special Topics in Chemistry: Advanced NMR Spectroscopy\*\*  
CHEM 635 - Biochemistry of Complex Carbohydrates  
CHEM 640 - Special Topics in Molecular Structure  
CHEM 670 - Special Topics in Dynamics and Mechanism\*\*  
CHEM 680 - Seminar in Biophysical Chemistry  
CHEM 682 - Current Topics in Biochemistry  
CHEM 684 - Special Topics in Chemistry\*\*  
CHEM 684A - Special Topic: Organic Spectroscopy\*\*

\*\*Special Topics courses that may be approved as electives in those years when their topic is appropriate (subject to confirmation by the Biochemistry Undergraduate Committee)