

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

76-79 credits  
(updated September 2006)

Biology (15 Credits; 9 upper-level)	Pre-Requisites	Credits	Semesters Offered	Semester Taken	Grade
BIOL 100 - Concepts of Biology*	None	4	FSZ		
BIOL 100L - Concepts of Bio Lab*	BIOL 100 (pre- or co- req)	2	FSZ		
BIOL 302 - Molecular & General Genetics*	BIOL 100, CHEM 101, CHEM 102 (pre- or co-req), sophomore	4	FSZ		
BIOL 303 - Cell Biology	BIOL 302, CHEM 102	3	FS		
BIOL 302L - Genetics Lab OR BIOL 303L - Cell Biology Lab	100L, 302 100L, 303	2	FS F		
<b>Chemistry (27-28 credits; 17-18 upper-level)</b>					
CHEM 101 - Principles of Chemistry I*	MATH 150	4	FSZ		
CHEM 102 - Principles of Chemistry II*	CHEM 101	4	FSZ		
CHEM 102L - Intro Chemistry Lab I*	CHEM 101; CHEM 102 (pre- or co-req)	2	FSZ		
CHEM 300 - Analytical Chemistry	CHEM 102, CHEM 102L	4	FS		
CHEM 301 - Physical Chemistry I OR CHEM 303 - Phys Chem for the Biochem Sci	CHEM 102, MATH 152; PHYS 122 (pre-/co-req)  CHEM 102, CHEM 351, MATH 152; PHYS 112/122 (pre-/co-req) or instr perm	4  3	F  S		
CHEM 351 - Organic Chemistry I*	CHEM 101, CHEM 102	3	FS		
CHEM 351L - Organic Chemistry Lab I*	CHEM 102L; CHEM 351 (pre- or co-req)	2	FS		
CHEM 352 - Organic Chemistry II*	CHEM 351	3	SZ		
CHEM 352L - Organic Chemistry Lab II*	CHEM 351L; CHEM 352 (pre- or co-req)	2	SZ		
<b>Biochemistry (12 credits; all upper-level)</b>					
CHEM 437 - Comprehensive Biochem I*	BIOL 100, CHEM 352	4	F		
CHEM 437L - Biochemistry Laboratory*	CHEM 352L; 437 (pre- or co-req)	4	FS		
CHEM 438 - Comprehensive Biochem II*	CHEM 437	4	S		
<b>Upper-Level Electives (list on reverse side of this sheet) (6-8 credits; all upper-level)</b>					
<b>Mathematics and Physics (16 credits)</b>					
MATH 151 - Calculus & Analytical Geom I*	MATH 150	4	FSZ		
MATH 152 - Calculus & Analytical Geom 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 - 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 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 445 - Signal Transduction  
BIOL 451 - Neurobiology  
BIOL 454 - Vision Science  
BIOL 456 - Plant Molecular Biology  
BIOL 475 - Biology of Bacteria  
BIOL 476 - Antibiotics: Origin, Mechanism, Resistance  
BIOL 483 - Evolution: From Genes to Genomes  
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 601\*\* - Special Topics : Advance NMR Spectroscopy  
CHEM 635 - Biochemistry of Complex Carbohydrates  
CHEM 640\*\* - Special Topics in Molecular Structure  
CHEM 680 - Seminar in Biophysical Chemistry  
CHEM 682 - Current Topics in Biochemistry  
CHEM 684A\*\* - Special Topic: Organic Spectroscopy

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