

The Pennsylvania State University  
 Department of Biochemistry & Molecular Biology  
**BIOCHEMISTRY & MOLECULAR BIOLOGY – Biochemistry Option**  
 Course Requirements (For students entering Fall 2012 and later)

1. GENERAL EDUCATION			
<b>ARTS (6 cr)</b>			
	(GA)	3	
	(GA)	3	
	(GA)	3	
<b>HUMANITIES (6 cr)</b>			
	(GH)	3	
	(GH)	3	
	(GH)	3	
<b>SOCIAL &amp; BEHAVIORAL SCIENCES (6 cr)</b>			
	(GS)	3	
	(GS)	3	
	(GS)	3	
Students may <b>petition</b> to substitute 3 credits from one of the above knowledge domains for 3 credits in another domain, thereby substituting 9-6-3 credit pattern for the default 6-6-6 pattern in these general education courses.			
<b>COMMUNICATIONS (GWS) (9 cr)</b>			
^ ENGL 015 or 030; Rhetoric & Comp (non-honors)		3	
^ CAS 100 A, B, or C: Effective Speech (non-honors)		3	
^ ENGL/CAS 137H (fall) and 138T (spring) - Honor students first-year experience in place of ENGL30/CAS100.			
ENGL 202C: Technical Writing		3	
<b>HEALTH &amp; PHYSICAL ACTIVITIES (3 cr)</b>			
(GHA or GHS or GPE)			
(GHA or GHS or GPE)			
(GHA or GHS or GPE)			
<b>WRITING ACROSS THE CURRICULUM (3 cr)</b>			
		3	
<b>US/INTERNATIONAL CULTURES (6 cr)</b>			
	(US)		
	(IL)		
2. REQUIREMENTS FOR THE MAJOR			
<b>CHEMISTRY (22 cr)</b>			
CHEM 110 (H): Chemical Principles I - "C" required		3	
CHEM 111: Experimental Chemistry I - "C" required		1	
CHEM 112 (H): Chemical Principles II - "C" required		3	
CHEM 113: Experimental Chemistry II		1	
CHEM 210 (H): Organic Chemistry I		3	
CHEM 212 (H): Organic Chemistry II		3	
CHEM 213: Organic Chemistry Lab		2	
CHEM 450: Physical Chemistry Thermodynamics		3	
CHEM 452: Physical Chemistry Quantum Chemistry		3	
<b>BIOCHEMISTRY &amp; MOLECULAR BIOLOGY (25 cr)</b>			
BMB 251: Molecular & Cell Biology		3	
BMB 252: Molecular & Cell Biology II		3	
BMB 400: Molec. Biol. of the Gene		2	
BMB 401: General Biochemistry		3	
BMB 402: General Biochemistry		3	
BMB 442: Lab Prot., Nuc. Acid, Molec Clon		3	
BMB 443W: Lab Protein Purifi./Enzymo		3	
BMB 445W: Lab Molecular Genetics		2	
or			
B M B 448: Model Sys. & Approaches in Cell Biol. Inq.		2	
BMB 474: Analytical Tech in BMB		3	
<b>MICROBIOLOGY (5 cr)</b>			
MICRB 201: Intro. Microbiology		3	
MICRB 202: Intro. Microbiology Lab		2	
<b>MATHEMATICS ( 8 cr)</b>			
MATH 140: Calculus I - "C" required		4	
MATH 141: Calculus II		4	
<b>BIOLOGY (3 cr)</b>			
BIOL 322: Genetic Analysis		3	
<b>PHYSICS (12 cr)</b>			

PHYS 211: Gen. Physics: Mechanics	4		
PHYS 212: Gen Phys: Elec./Magnetism	4		
PHYS 213: Gen Phys: Fluids/Thermal	2		
PHYS 214: Gen Phys: Wave/Motion/Quantum	2		
<b>FIRST YEAR SEMINAR (1 cr)</b>			
PSU 016: First Year Seminar	1		
<b>3. ELECTIVES IN THE MAJOR</b>			
<b>LIST A select 7-9 credits from any 400 level BMB/MICRB/CHEM course with a total maximum of 4-credits in BMB 488 and/or 496:</b>			
Total			
<b>4. MATHEMATICAL SCIENCE</b>			
<b>LIST B select 2-3 credits from: CmpSc 101 (3), 201 (3); MATH 220 (2), 231 (2), 250 (3); STAT 250 (3), 301 (3), 401 (3)</b>			
Total			
<b>5. LIST C FREE ELECTIVES</b>			
<b>Select 7 – 10 credits from Department List</b>			
Total			
<b>LIST C FREE ELECTIVES</b> - With the EXCEPTION of the courses listed below, ALL courses appearing in the University Bulletin are acceptable as elective courses: 6 credits of ROTC may be applied toward graduation requirements. <b>Students MAY NOT</b> fulfill this requirement with lower level or general education courses in math and science (including but not limited to examples such as: any BI SC course, any B M B course below the 100 level, MATH 110 and 111, and the like). <b>Students MAY NOT</b> fulfill this requirement with courses that significantly repeat material from courses required for the major, (including but not limited to examples such as: CHEM 202 or 203 after taking CHEM 210 or 212, or vice-versa; PHYS 250 or 251 after taking PHYS 211, 212, 213, and 214, or vice-versa; and so forth). <b>Students MAY NOT</b> fulfill this requirement with remedial courses (including but not limited to examples such as: LL ED 005 and 010; ENGL 004, 005, and 006; CHEM courses below CHEM 110; MATH courses below MATH 110; STAT 100; PHYS courses below PHYS 211; and the like).			
<b>6. ENTRANCE TO MAJOR</b>			
2.0 GPA is required			
CHEM 110 (H): Chemical Principals	3		
CHEM 111: Experimental Chemistry I	1		
CHEM 112 (H): Chemical Principals II	3		
MATH 140: Calculus I	4		
A student enrolled in this major must receive a grade "C" or better in the following courses specified by Senate Policy 82-44			
<b>7. TO GRADUATE</b>			
A "C" grade or better is required in <b>2</b> of the following <b>3</b> courses. <b>All 3 courses required.</b>			
MICRB 201: Intro. Microbiology	3		
MICRB 251: Molecular & Cell Biology	3		
MICRB 252: Molecular & Cell Biology	3		
Total ≥	<b>9</b>		
+			
Earn "C" or higher in 9 credits of any 400-level MICRB/BMB courses except BMB 442, 443W, 445W, 448, 488, 496, MICRB 421W, 422, 447			
Total ≥ 9			
<b>8. REMEDIAL &amp; REPEATS</b>			
Courses that do not meet degree requirements			
<b>9. SENATE POLICY 83-80</b>			
Source/Time Credit acquisition:			
36 of last 60 credits at PSU?			
60 credits in last 5 years?			
<b>10. GPA/CREDITS</b>			
Overall GPA must be ≥ 2.0			
Total credits earned (less repeats and remedial; <b>must</b>			

have at least 125 credits to graduate).			
11. University Activities/Awards			
12. Program Exceptions			