

The Pennsylvania State University
Department of Biochemistry & Molecular Biology
BIOCHEMISTRY & MOLECULAR BIOLOGY – Molecular & Cell Biology Option
Course Requirements (For students entering Summer 2010 and later)

1. GENERAL EDUCATION			
ARTS (6 cr)			
	(GA)	3	
	(GA)	3	
	(GA)	3	
HUMANITIES (6 cr)			
	(GH)	3	
	(GH)	3	
	(GH)	3	
SOCIAL & BEHAVIORAL SCIENCES (6 cr)			
	(GS)	3	
	(GS)	3	
	(GS)	3	
Students may petition 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.			
COMMUNICATIONS (GWS) (9 cr)			
ENGL 015 or 030; Rhetoric & Comp		3	
ENGL 202C: Technical Writing		3	
CAS 100 A, B, or C: Effective Speech		3	
HEALTH & PHYSICAL ACTIVITIES (3 cr)			
	(GHA or GHS or GPE)		
	(GHA or GHS or GPE)		
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WRITING ACROSS THE CURRICULUM (3 cr)			
		3	
US/INTERNATIONAL CULTURES (6 cr)			
	(US)		
	(IL)		
2. REQUIREMENTS FOR THE MAJOR			
CHEMISTRY (16 cr)			
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	
PHYSICAL CHEMISTRY SEQUENCE (3 or 6 crs)			
CHEM 450: Physical Chemistry Thermodynamics		3	
CHEM 452: Physical Chemistry Quantum Chemistry		3	
or			
BMB 428: Physical Chem w/Biological Applications		3	
BIOCHEMISTRY & MOLECULAR BIOLOGY (28 cr)			
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 430: Developmental Biology		3	
BMB 442: Lab Prot., Nuc. Acid, Molec Clon		3	
BMB 443W: Lab Protein Purifi./Enzymo		3	
BMB 445W: Lab Molecular Genetics		2	
BMB 460: Cell Growth & Differentiation		3	
MICROBIOLOGY (8 cr)			
MICRB 201: Intro. Microbiology		3	
MICRB 202: Intro. Microbiology Lab		2	
MICRB 410: Principal of Immunology		3	
MATHEMATICS (8 cr)			
MATH 140: Calculus I - "C" required		4	
MATH 141: Calculus II		4	
BIOLOGY (3 cr)			
BIOL 322: Genetic Analysis		3	
PHYSICS SEQUENCE (8 or 12 crs)			
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		
or			
PHYS 250: Intro Physics I	4		
PHYS 251: Intro Physics II	4		
FIRST YEAR SEMINAR (1 cr)			
PSU 016: First Year Seminar	1		
3. ELECTIVES IN THE MAJOR			
LIST A select 5-6 credits from any 400 level BMB/MICRB course with a maximum of 4-credits in 496:			
Total			
4. MATHEMATICAL SCIENCE			
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)			
Total			
5. LIST C FREE ELECTIVES			
Select 4-13 credits from Department List			
Total			
List C FREE ELECTIVES – 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.			
BI SC: 001, 002; CHEM: 001, 003, 101, 108; ENGL: 004, 005; LL ED: 005, 010, 123; MATH: 001, 003, 004, 111, 017, 018, 021, 022, 026, 030, 035, 036, 040, 041, 081, 082, 083, 110; PH SC: 007; PHYS: 001, 150, 151; STAT: 100			
6. ENTRANCE TO MAJOR			
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			
7. TO GRADUATE			
A "C" grade or better is required in 2 of the following 3 courses. All 3 courses required.			
MICRB 201: Intro. Microbiology	3		
MICRB 251: Molecular & Cell Biology	3		
MICRB 252: Molecular & Cell Biology	3		
Total \geq	9		
+			
Earn "C" or higher in 9 credits of any 400-level MICRB/BMB courses except BMB 443W, 444, 445W, 446, BMB/MICRB 442, 496, MICRB 421W, 422, 447			
Total \geq 9			
8. REMEDIAL & REPEATS			
Courses that do not meet degree requirements			
9. SENATE POLICY 83-80			
Source/Time Credit acquisition:			
36 of last 60 credits at PSU?			
60 credits in last 5 years?			
10. GPA/CREDITS			
Overall GPA must be \geq 2.0			
Total credits earned (less repeats and remedial; must have at least 125 credits to graduate).			
11. University Activities/Awards			
12. Program Exceptions			