

The Pennsylvania State University
 Department of Biochemistry & Molecular Biology
 BIOTECHNOLOGY MAJOR – General 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)		
	(GHA or GHS or GPE)		
WRITING ACROSS THE CURRICULUM (3 cr)			
		3	
US/INTERNATIONAL CULTURES (6 cr)			
	(US)		
	(IL)		
2. REQUIREMENTS FOR THE MAJOR			
CHEMISTRY (8 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	
BIOCHEMISTRY & MOLECULAR BIOLOGY (14 cr)			
BMB 211: Elementary Biochem		3	
BMB 221: Applied Biochemistry		2	
BMB 251: Molecular & Cell Biology		3	
BMB 252: Molecular & Cell Biology II		3	
BMB 442: Lab Prot., Nuc. Acid, Molec Clon		3	
BIOTECHNOLOGY (11 cr)			
BIOTC 416: Microbial Biotechnology		2	
BIOTC 459: Plant Tissue Culture Biotc.		3	
BIOTC 479: Methods Biofermentations		3	
BIOTC 489: Animal Cell Culture Meth.		3	
MICROBIOLOGY (11 cr)			
MICRB 201: Intro. Microbiology		3	
MICRB 202: Intro. Microbiology Lab		2	
MICRB 410: Principals of Immunology		3	
MICRB 421W: Lab Gen/Applied Micro		3	
MATHEMATICS (8 cr)			
MATH 140: Calculus I - "C" required		4	
MATH 141: Calculus II		4	
STATISTICS (3 cr)			
STAT 250: Introduction Biostatistics			
BIOLOGY (3 cr)			
BIOL 322: Genetic Analysis		3	
PHYSICS (8 cr)			
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			
a. Select 6 or 8 credits from chemistry sequence:			
CHEM 210 (H): Organic Chemistry I		3	
CHEM 212 (H): Organic Chemistry II		3	
CHEM 213: Organic Chemistry Lab		2	
or			
CHEM 202: Fund. of Organic Chem I		3	
CHEM 203: Fund. of Organic Chem II		3	
+			
b. Select 6 credits from any 400-level BIOTC/BMB/MICRB lecture course, or FD SC 408			
Total			
4. LIST C FREE ELECTIVES			
Select 14-16 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			
5. 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 ≥ 9			
+			
Earn "C" or higher in 9 credits of any 400-level MICRB/BMB/BIOTC courses except BMB 443W, 444, 445W, 446, BMB/MICRB 442, 496, MICRB 421W, 422, 447			
Total ≥ 9			
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. REMEDIAL & REPEATS			
Courses that do not meet degree requirements			
8. SENATE POLICY 83-80			
Source/Time Credit acquisition:			
36 of last 60 credits at PSU?			
60 credits in last 5 years?			
9. GPA/CREDITS			
Overall GPA must be ≥ 2.0			
Total credits earned (less repeats and remedial; must have at least 125 credits to graduate).			
10. University Activities/Awards			
11. Program Exceptions			