The Pennsylvania State University
Department of Biochemistry & Molecular Biology
BIOTECHNOLOGY MAJOR – Clinical Laboratory Science Option
Course Requirements (For students entering Summer 2012 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		
^ CAS 100 A, B, or C: Effective Speech	3		
^ ENGL/CAS 137H (fall) and 138T (spring) - Honor students first-year experience in place of ENGL30/CAS100.			
ENGL 202C: Technical Writing	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 (6 cr)			
BMB 211: Elementary Biochem	3		
BMB 212: Elementary Biochem Lab	1		
BMB 221: Applied Biochemistry	2		
MICROBIOLOGY (52 cr)			
MICRB 201: Intro. Microbiology	3		
MICRB 202: Intro. Microbiology Lab	2		
MICRB 251: Molecular & Cell Biology I	3		
MICRB 252: Molecular & Cell Biology II	3		
MICRB 410: Principals of Immunology	3		
MICRB 412: Medical Microbiology	3		
MICRB 421W: Lab Gen/Applied Micro	3		
MICRB 422: Medical Microbiology Lab	2		
MICRB 405 A-F Seminar/Practicum	30		
MATHEMATICS (8 cr)			
MATH 140: Calculus I - "C" required	4		
MATH 141: Calculus II	4		
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			
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		
4. LIST C FREE ELECTIVES			
Select **1-3** 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 442, 443W, 444, 445W, 446, 488, 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			