The Pennsylvania State University
Department of Biochemistry & Molecular Biology
MICROBIOLOGY MAJOR
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 (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			
MICROBIOLOGY (17 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 421W: Lab Gen/Applied Micro	3			
MICRB 442: Lab Prot., Nuc. Acid Molec Clon	3			
BIOCHEMISTRY & MOLECULAR BIOLOGY (11 cr)				
BMB 400: Molec. Biol. of the Gene	2			
BMB 401: General Biochemistry	3			
BMB 402: General Biochemistry	3			
BMB 428: Physical Chem w/Biological Apps	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 (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 any 4 of the following courses:				
MICRB 401: Micro Physiology	3			
MICRB 410: Principals of Immunology	3			
MICRB 412: Medical Microbiology	3			
MICRB 415: General Virology	3			
MICRB 450: Micrb/Molec Genetics	2			
+				
b. Select 3 credits in 400-level laboratory courses.				
MICRB 422: Medical Microbiology Lab	2			
MICRB 447: Molec. Immunology Lab	1			
BMB 444: Lab in Carbohydrates/Lipids	1			
BMB 445W: Lab Molecular Genetics I	2			
BMB 446: Lab Molecular Genetics II	1			
+				
c. Select 6-7 credits from FD SC 408 (2), or any 400-level MICRB course except MICRB 400 & 496				
Total ≥ 21				
4. LIST C FREE ELECTIVES				
Select **9 – 11** 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 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				