The Pennsylvania State University
Department of Biochemistry & Molecular Biology
MICROBIOLOGY MAJOR
Course Requirements (For students entering Fall 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)			
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(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 (14 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		
BIOCHEMISTRY & MOLECULAR BIOLOGY (14 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		
B M B 442: Lab Prot., Nuc. Acid Molec Clon	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 445W: Lab Molecular Genetics I	2		
BMB 448: Model Sys & Approach in Cell Biol	2		
+			
c. Select 6-7 credits from: FD SC 408 (2), B M B 488, B M B 496 or any MICRB 400-level course, with a total maximum of 4-credits in BMB 488 and/or 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. **Students MAY NOT** 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). **Students MAY NOT** 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). **Students MAY NOT** 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).			
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 442, 443W, 445W, 448, 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**).			