

# MILLERSVILLE UNIVERSITY

Student Name: \_\_\_\_\_ Student I.D.# \_\_\_\_\_

DEGREE: BS	<b>MAJOR REQUIREMENTS FOR A BS DEGREE IN</b>
MAJOR: BIOL	<b>BIOLOGY: MOLECULAR/BIOTECHNOLOGY</b>
OPTION: MOL	Total credit hours required: 120.0 minimum

## REQUIREMENTS AND POLICIES FOR THE BS BIOLOGY MAJOR

### A. Policies for Admission to the Major

1. New students (freshmen and transfers) must be admitted to the Biology major by the Office of Admissions upon admission to the University.
2. Admission of Millersville University students to the Biology major (from other departments or undeclared status) requires that the student is in satisfactory academic standing as described in the Undergraduate Catalog. Students who were dropped from a Biology major must satisfy the Biology Retention in the Major criteria before being readmitted to a Biology major.
3. Non-degree and continuing education students must be admitted to the Biology major by the Office of Admissions.

### B. Policies for Retention in the Major

1. University requirements for retention must be met.
2. All Biology majors must earn grades of C- (C minus) or higher in all core courses (BIOL 101, 211, 221, 343, 362, 364) required for their option.
3. The requirements stated above must be satisfied before completion of 90 Millersville University credit hours.
4. Millersville University students changing majors, or Biology majors changing options within the Biology major, must satisfy the above requirements prior to completion of 45 additional Millersville University credit hours. Note: Students who desire to change their major to Biology must refer to the Biology department's Admission to the Major Policy. Those transferring into the major may substitute BIOL 100 for BIOL 101 if they earn a grade of B- (B minus) or higher in this course.
5. Transfer students with 60 credit hours or more must satisfy the above requirements prior to completion of 45 Millersville University credit hours. Transfer students with fewer than 60 credits should refer to the policy for all other majors (part #3 above).
6. Any students failing to meet the above requirements will be dropped from the Biology major. Students who wish to re-enter the major, must follow the requirements stipulated in part 4 above.

### C. Policies for Completion of the Major

1. Completion of all University curricular requirements.
2. ENGL 312, Technical Writing, is the recommended course for the Upper Level Writing Requirement under the General Education Curriculum Requirements.

**Note to the student:** *This form is provided as a guide. It is your responsibility to consult regularly with your adviser to be aware of changes and curriculum details which are not incorporated on this form.*

## MAJOR SEQUENCE AND DEGREE REQUIREMENTS

Major: **BS BIOLOGY**  
 Option: **MOLECULAR/BIO TECHNOLOGY**  
 Major Field Requirements: **39.0 credits**  
 Other Requirements: **39.0-43.0 credits**

When applicable, up to six of the **REQUIRED RELATED** courses may be credited toward the Liberal Arts Core subject to normal distribution rules.

Course No.	Short Title	C.H.	Grade	Q.P.	Course No.	Short Title	C.H.	Grade	Q.P.
<b>REQUIRED BIOLOGY COURSES (24.0 credits)</b>					<b>REQUIRED RELATED (39.0-43.0 credits)</b>				
BIOL 101	Foundations of Biology	4.0	_____	_____	<b>Chemistry (24.0 credits)</b>				
BIOL 211	Concepts of Zoology	4.0	_____	_____	CHEM 111*	Intro to Chemistry I	4.0	_____	_____
BIOL 221	Concepts of Botany	4.0	_____	_____	CHEM 112*	Intro to Chemistry II	4.0	_____	_____
BIOL 343	Ecology & Evolution	4.0	_____	_____	CHEM 231*	Organic Chemistry I	4.0	_____	_____
BIOL 362	Cell & Development	4.0	_____	_____	CHEM 232	Organic Chemistry II	4.0	_____	_____
BIOL 364	Genetics & Mol. Biology	4.0	_____	_____	CHEM 326**	Biochemistry I	4.0	_____	_____
<b>REQUIRED MOL/BIO TECH COURSES (8.0-9.0 credits)</b>					---AND---				
BIOL 462	Molecular Biology	4.0	_____	_____	CHEM 327	Biochemistry II	4.0	_____	_____
BIOL 466	Molecular/Cell Tech	3.0	_____	_____	---OR---				
BIOL 472	Seminar in Biology(Mol)	1.0-2.0	_____	_____	BIOL/CHEM 324	Plant Biochemistry	4.0	_____	_____
<b>BIOLOGY ELECTIVES (6.0-7.0 credits)</b>					NOTE: A student may complete a Biochemistry minor by completing CHEM 328 (Analytical Biochemistry Laboratory) in addition to all the above Chemistry courses OR a student may complete a Chemistry minor by completing CHEM 265 (Quantitative Analysis) in addition to CHEM 111, 112, 231 and 232.				
In consultation with your advisor, choose additional courses at the 300-level or higher and approved for BIOL majors to bring total BIOL credits to 39. The following courses are recommended.					*Must earn a C- or better in these courses before completing CHEM 232.				
BIOL 463	Virology	4.0	_____	_____	** Must earn a C- or better in CHEM 326 before completing CHEM 327.				
BIOL 465	Developmental BIOL	3.0	_____	_____	<b>Mathematics &amp; Computer Science (7.0 - 9.0 credits)</b>				
BIOL 467	Human Genetics	3.0	_____	_____	MATH 161	Calculus I	4.0	_____	_____
BIOL _____	_____	_____	_____	_____	----- or -----				
BIOL _____	_____	_____	_____	_____	MATH 163	Honors Calculus	5.0	_____	_____
BIOL _____	_____	_____	_____	_____	----- <b>AND</b> -----				
BIOL _____	_____	_____	_____	_____	MATH*	_____	_____	_____	_____
					----- or -----				
					CSCI*	_____	4.0	_____	_____
					*Note: Only MATH courses numbered 160 or above OR CSCI courses numbered 140 or above may be used to fulfill these requirements.				
					<b>Physics (8.0 - 10.0 credits)</b>				
					PHYS 131	Physics I with Algebra	4.0	_____	_____
					PHYS 132	Physics II with Algebra	4.0	_____	_____
					----- or -----				
					PHYS 231	Phys I with Calculus	5.0	_____	_____
					PHYS 232	Phys II with Calculus	5.0	_____	_____
					<b>General Electives (As necessary)</b>				
					_____	_____	_____	_____	_____
					_____	_____	_____	_____	_____
					_____	_____	_____	_____	_____