DEGREE: BS
MAJOR: BIOL
OPTION: MOL

MAJOR REQUIREMENTS FOR A BS DEGREE IN BIOLOGY: MOLECULAR/BIOTECHNOLOGY

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/BIOTECHNOLOGY  
**Major Field Requirements:** 39.0 credits  
**Other Requirements:** 39.0-43.0 credits

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Short Title</th>
<th>C.H.</th>
<th>Grade</th>
<th>Q.P.</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 101</td>
<td>Foundations of Biology</td>
<td>4.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOL 211</td>
<td>Concepts of Zoology</td>
<td>4.0</td>
<td></td>
<td></td>
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<tr>
<td>BIOL 221</td>
<td>Concepts of Botany</td>
<td>4.0</td>
<td></td>
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<tr>
<td>BIOL 343</td>
<td>Ecology &amp; Evolution</td>
<td>4.0</td>
<td></td>
<td></td>
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<tr>
<td>BIOL 362</td>
<td>Cell &amp; Development</td>
<td>4.0</td>
<td></td>
<td></td>
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<tr>
<td>BIOL 364</td>
<td>Genetics &amp; Mol. Biology</td>
<td>4.0</td>
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</tbody>
</table>

**REQUIRED BIOLOGY COURSES (24.0 credits)**

<table>
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<td>4.0</td>
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<td>BIOL 211</td>
<td>Concepts of Zoology</td>
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<td>BIOL 221</td>
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<td>Ecology &amp; Evolution</td>
<td>4.0</td>
<td></td>
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<tr>
<td>BIOL 362</td>
<td>Cell &amp; Development</td>
<td>4.0</td>
<td></td>
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<tr>
<td>BIOL 364</td>
<td>Genetics &amp; Mol. Biology</td>
<td>4.0</td>
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</table>

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

**REQUIRED RELATED (39.0-43.0 credits)**

<table>
<thead>
<tr>
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<th>C.H.</th>
<th>Grade</th>
<th>Q.P.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 111*</td>
<td>Intro to Chemistry I</td>
<td>4.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 112*</td>
<td>Intro to Chemistry II</td>
<td>4.0</td>
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<td></td>
</tr>
<tr>
<td>CHEM 231*</td>
<td>Organic Chemistry I</td>
<td>4.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 232</td>
<td>Organic Chemistry II</td>
<td>4.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 326**</td>
<td>Biochemistry I</td>
<td>4.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM 327</td>
<td>Biochemistry II</td>
<td>4.0</td>
<td></td>
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</tr>
<tr>
<td>BIOL/CHEM</td>
<td>Plant Biochemistry</td>
<td>4.0</td>
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--AND--

**MATH 161**  
**MATH 163**  
**MATH***  
**CSCI***  

*Must earn a C- or better in these courses before completing CHEM 232.

**Physics (8.0 - 10.0 credits)**

<table>
<thead>
<tr>
<th>Course No.</th>
<th>Short Title</th>
<th>C.H.</th>
<th>Grade</th>
<th>Q.P.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 131</td>
<td>Physics I with Algebra</td>
<td>4.0</td>
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<td></td>
</tr>
<tr>
<td>PHYS 132</td>
<td>Physics II with Algebra</td>
<td>4.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHYS 231</td>
<td>Phys I with Calculus</td>
<td>5.0</td>
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</tr>
<tr>
<td>PHYS 232</td>
<td>Phys II with Calculus</td>
<td>5.0</td>
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</tbody>
</table>

**General Electives (As necessary)**

<table>
<thead>
<tr>
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<th>Grade</th>
<th>Q.P.</th>
</tr>
</thead>
</table>

**Mathematics & Computer Science (7.0 - 9.0 credits)**

<table>
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<th>C.H.</th>
<th>Grade</th>
<th>Q.P.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 161</td>
<td>Calculus I</td>
<td>4.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 163</td>
<td>Honors Calculus</td>
<td>5.0</td>
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</tbody>
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**CHEM 328 FALL 2010.2**