

## Bachelor of Science in Biological Sciences (BIOL BS) - Minimum Requirements

*See Important Notes on the back of this form!*

|  | <b>BIOL CORE COURSES</b>   | <b>Pre-requisites</b>   | <b>Cr.</b> |
|--|--|---|------------|
|  | BIOL 141 - Foundations of Biology: Cells, Energy & Organisms   | MATH 150 or higher or placement in MATH151  | 4          |
|  | BIOL 142 - Foundations of Biology: Ecology and Evolution   | MATH 150 or higher or placement in MATH151, BIOL 141  | 4          |
|  | BIOL 302 - Molecular and General Genetics (see note 3)   | MATH 150 or higher or placement in MATH151, BIOL 141, BIOL 142, CHEM 101/123, CHEM 102/124 (co-requisite) | 4          |
|  | BIOL 303 - Cell Biology  | MATH 150 or higher or placement in MATH151, BIOL 141, BIOL 142, BIOL 302, CHEM 102                        | 4          |
|  | BIOL 300L - Experimental Biology Laboratory  | MATH 150 or higher or placement in MATH151, BIOL 141, BIOL 142, BIOL 302, CHEM 102, CHEM 102L             | 2          |
|  | <b>BIOL ELECTIVES</b>  |   |            |
|  | _____ Column A elective (listed on back; see note 4)   | See catalog   | 3-4        |
|  | _____ Column B elective (listed on back; see notes 5, 13)  | See catalog   | 3-4        |
|  | _____ Column A or B elective (see notes 4, 5, 13)  | See catalog   | 3-4        |
|  | _____ Column B BIOL 4XX elective (see note 6)  | See catalog   | 4          |
|  | _____ Upper Level Laboratory elective (not BIOL300L)   | See catalog   | 2-4        |
|  | _____ Upper Level Laboratory elective (not BIOL300L)   | See catalog   | 2-4        |
|  | <b>OTHER COURSES</b>   |   |            |
|  | CHEM 101 - Principles of Chemistry I   | MATH 106 or higher  | 4          |
|  | CHEM 102 - Principles of Chemistry II  | CHEM 101  | 4          |
|  | CHEM 102L - Introductory Chemistry Lab I   | CHEM 101, CHEM 102 (pre/co-requisite)   | 2          |
|  | CHEM 351 - Organic Chemistry I   | CHEM 102  | 3          |
|  | CHEM 351L - Organic Chemistry Lab I  | CHEM 102, CHEM 102L, CHEM 351 (pre/co-requisite)  | 2          |
|  | PHYS 111 - Basic Physics I (see note 7)  | None  | 4          |
|  | PHYS 112 - Basic Physics II (see note 7)   | PHYS 111  | 4          |
|  | MATH 151 - Calculus & Analytical Geometry I  | MATH 150  | 4          |
|  | STAT 350 - Stats w/Applications in Biological Sciences<br>or<br>STAT 355 - Intro Prob and Stats for Scientists/Engineers | MATH 150 or higher<br>MATH 152  | 4          |
|  | _____ - MATH/STAT/CMSC elective (listed on back)   | See catalog   | 3-4        |

| Column A<br>electives  | Column B electives  | Upper Level Laboratories  | MATH/STAT/CMS<br>C                               |
|--|---|---|--|
| BIOL 275<br>BIOL 304<br>BIOL 305 (note 4)<br>BIOL 306<br>BIOL 307 (note 4)<br>BIOL 313<br>BIOL 430<br>BIOL 442 | Any BIOL 4XX course <u>except</u><br>BIOL 430, 442, 495, 497H,<br>499, 499H, 499L or any Lab<br>course (see note 6) | Any BIOL 3XXL or 4XXL Lab<br>course <u>except</u> BIOL 300L   | MATH 152<br>MATH 221                             |
|  | CHEM 352 and CHEM 352L<br>(must take both - see note 5)<br>CHEM 437<br>CHEM 438                                     | Two semesters of BIOL 499<br>(total of 4 credits or more)<br>and one semester of either<br>BIOL 499L or BIOL 497H | STAT 414<br>STAT 420<br>STAT 454<br>(see note 8) |
|  | STAT 414      STAT 419<br>STAT 420      STAT 454  |   | CMSC 104<br>CMSC 201                             |
|  | See note 13   |   |  |

### Important Notes:

- 1) Students must earn a "C" or better in all major courses AND course prerequisites.
- 2) At least half of the required BIOL courses and electives must be completed in residence: for the BIOL BS at least six of eleven BIOL classes must be taken at UMBC.
- 3) BIOL 141, BIOL 142 and BIOL 302 are considered an academic sequence. Once you pass BIOL 302 you may not go back and repeat BIOL 141 or BIOL 142.
- 4) Students may not use both BIOL 305 AND BIOL 307 as Column A electives.
- 5) Students can substitute CHEM 352 and CHEM 352L (must take both) for one Column B course.
- 6) At least one BIOL 4XX lecture course must be taken at UMBC (NOTE: BIOL 430, 442, 495, 497 and 499 cannot be used to satisfy this requirement for the BIOL BS).
- 7) Students may substitute PHYS121 for PHYS111, and PHYS122 for PHYS112, but should note that PHYS121/122 may not satisfy some professional school admission requirements.
- 8) Students using a STAT class as a Column B course may not use the same course to fulfill the MATH/STAT elective requirement.
- 9) BIOL BS majors receive 33 - 43 Upper Level Credits (3XX/4XX) that may be applied to the University requirement of 45 Upper Level credits for graduation, and 69 - 77 credits toward the 120 total credits needed for graduation.
- 10) The Biological Sciences Department evaluates completion of major requirements based on COURSES completed, not CREDITS completed, because equivalent courses taken elsewhere may not be the same number of credits as the UMBC course they replace.
- 11) Students who are BIOC (Biochemistry and Molecular Biology) majors who wish to also pursue a BIOL BS degree may use Core BIOL, CHEM, MATH/STAT and PHYS courses from the BIOC major towards the BIOL BS degree, but MUST take separate electives for the two degrees (ie., no 'double-dipping' for the electives).
- 12) Under exceptional circumstances, the Department may waive or alter a BIOL major requirement. Students seeking to petition for a waiver must consult with their academic adviser, then may submit a 'Petition for Waiver/Substitution of Program Requirements' form, found here: <https://biology.umbc.edu/undergrad/forms-links/>.
- 13) Biologically-relevant 4XX level courses from other departments may be acceptable as a 'Column B' elective for the BIOL BS degree. Prior approval from the Biological Sciences Department Undergraduate Committee is required, using the form indicated in note 12. Such courses may not be used for the BIOL 4XX requirement.