

**Biology Advising Guide**  
**Student Success Center**  
**UMass Boston**  
Updated SP23

Biology students need a major GPA of 2.0 GPA to graduate. This grade point average is for the BIOL courses (at the 200 level and above) and BIOCHM courses you have taken at UMass/Boston

### Introductory courses:

Students must complete all 18 credits of introductory courses.

- BIOL111 – General Biology I
- BIOL112 – General Biology II
  - Prerequisites: BIOL111
- CHEM115 – Chemical Principles I Lecture
  - Corequisites: CHEM117 and MATH130 or placement into MATH140
- CHEM117 – Chemical Principles I Lab
  - Corequisites: CHEM115
- CHEM116 – Chemical Principles II Lecture
  - Prerequisites: CHEM115 with a C- or better
  - Corequisites: CHEM118
- CHEM118 – Chemical Principles II Lab
  - Corequisites: CHEM116

### Math Requirement:

Based on ALEKS Math Placement results, students should begin with MATH130 – Pre Calc and then move on to a calculus course of their choosing. Biology students must complete one calculus course and their options to fulfill the math requirement are as follows...

- MATH135 – Survey of Calculus
  - Prerequisites: Appropriate recent ALEKS score or MATH130
- MATH140 – Calculus I
  - Prerequisites: Appropriate recent ALEKS score or completion of MATH130 with a B or better
- MATH145 – Calculus I for Life Sciences
  - Prerequisites: Appropriate recent ALEKS score or MATH130 with a B or better

**\*\*MATH141 – Calculus II is not required for the biology major but is sometimes recommended based on a student's post-grad plans\*\***

- Prerequisites: MATH140 or MATH145 with a C- or better

**\*\*Both MATH140 and MATH145 suffice as the prerequisite for MATH141\*\***

**\*\*Students need to earn a B or better in math courses to move on to the next level in their sequence\*\***

### Physics Requirement:

Students that have declared a biology major have the option to take either the algebra-based physics sequence or the calculus-based physics sequence. Students must complete two semesters of physics courses with labs.

- PHYSIC107 – College Physics I (algebra-based)
  - Prerequisites: MATH130 or equivalent recent ALEKS score or instructor permission
- PHYSIC171 – Introductory Physics Lab for Life Sciences I (algebra-based)
  - Corequisites: PHYSIC107
- PHYSIC108 – College Physics II (algebra-based)
  - Prerequisites: PHYSIC107 with a C- or better
  - Prerequisites/Corequisites: MATH30
- PHYSIC172 – Introductory Physics Lab for Life Sciences II (algebra-based)
  - Prerequisites: PHYSIC171
  - Corequisites: PHYSIC108

**---OR---**

- PHYSIC113 – Fundamentals of Physics I (calculus-based)
  - Prerequisites/Corequisites: MATH140
- PHYSIC181 – Physics Laboratory I (calculus-based)

- Corequisites: PHYSIC107 or PHYSIC113
- PHYSIC114 – Fundamentals of Physics II (calculus-based)
  - Prerequisites: PHYSIC113 with a grade of C- or better
  - Prerequisites/Corequisites: MATH141
- PHYSIC182 – Physics Laboratory II (calculus-based)
  - Prerequisites: PHYSIC181 with a C- or better
  - Prerequisites/Corequisites: PHYSIC108 or PHYSIC114

\*\*Students can go from calculus-based physics I to algebra-based physics II but cannot go from algebra-based physics I to calculus-based physics II\*\*

\*\*PHYSIC113 has a pre/corequisite of MATH141.\*\*

### Intermediate Biology Requirement:

Students must take and pass ***all three*** intermediate biology courses. Students should be taking or have already completed their 100 level chemistry and math requirements if enrolled in their 200 level biology courses.

- BIOL210 – Cell Biology (with lab)
  - Prerequisites: BIOL112 and CHEM103 or CHEM115 and CHEM117
  - Prerequisites/Corequisites: MATH130 or placement into MATH140
- BIOL252 – Genetics (with lab)
  - Prerequisites: BIOL112 and CHEM103 or CHEM115 and CHEM117
  - Prerequisites/Corequisites: MATH130 or placement into MATH140
- BIOL290 – Population Biology (lecture only)
  - Prerequisites: BIOL112 and MATH130, MATH135, MATH140, or MATH145 or placement into MATH140

### Advanced Biology Requirement:

Students need to take 20 credits of the advanced biology curriculum. Students can pick any combination of courses between BIOL304 and BIOL391. Of those 20 credits, four credits must be lab credits.

*Example: Two ways to complete this requirement could be ...5 advanced biology lecture courses with their corresponding lab to earn the needed 20 credits and fulfill the four advanced lab requirement (5X4=20) ---OR--- four lectures with their corresponding labs and an additional two lecture only courses to earn 21 advanced biology credits and complete the advanced lab requirement (4X4+6).*

\*Students who are interested in taking BIOL334 should NOT take BIOL209 or BIOL304. If they take BIOL304 or BIOL209 they will not be eligible to take BIOL334.\*

\*\*Students can choose to take CHEM251, CHEM255, CHEM252, and CHEM256 but it is not required. If they chose to take these courses, they will count towards the 20 credits of advanced biology requirement, but they will only receive one lab credit for each. Students need a C- or better in CHEM116 to take CHEM251\*\*

\*\*\*No more than two of the four lab credits can be taken from courses outside the Biology Department, such as Organic Chemistry. The department requires a **minimum of two lab credits** must be taken from **within** the Biology Department.\*\*\*

\*\*\*\*Students who are interested in taking Anatomy and Physiology should take BIOL307 BIOL309 and BIOL308 BIOL310 to have it count towards their advanced biology requirement. Students should **NOT** take BIOL207 and 208. If a student takes BIOL207 and 208 they **CANNOT** take BIOL307 and BIOL308\*\*\*\*

### Lab Requirement:

Students must take a minimum of four advanced-level labs. This is meant to be built into the Advanced Biology Requirement credits and is not an additional four credits on top of the already needed 20 advanced biology credits.

\*Number of courses taken to fulfill this requirement will depend on which courses are taken and how many credits each course is worth. \*

\*\*All these courses and other experiences count towards the advanced lab requirement. \*\*

**Courses that satisfy one advanced Biology Lab credit:** BIOL306, BIOL309, BIOL310, BIOL313, BIOL316, BIOL317, BIOL321, BIOL328, BIOL330, BIOL332, BIOL334, BIOL337, BIOL338, BIOL340, BIOL345, BIOL347, BIOL356, BIOL361, BIOL362, BIOL365, BIOL370, BIOL378, BIOL382, BIOL391, CHEM255, CHEM256

**Courses that satisfy two Advanced Biology Lab credits:** BIOL343 and BIOL353

**Courses that satisfy three Advanced Biology Lab credits:** BIOCHM385 and BIOCHM386

### Notes From the Biology Department:

1. **PASS/FAIL POLICY** – Students may only take ONE course pass/fail that counts toward any of the biology major course requirements. This includes required chemistry, math, and physics courses.
2. **BIOLOGY TRANSFER COURSE POLICY (LIMITATIONS)** - Fully matriculated students cannot take courses elsewhere and transfer them to UMB. That said, students who have a particularly pressing reason to take courses at other institutions may appeal this regulation. That is done by using a prior approval form, obtained from the Admissions Office and signed by the Department Chairman, the Departmental Director of Undergraduate Advising, or the instructor of UMB's equivalent course
3. **BIOLOGY RESIDENCY REQUIREMENTS -**
  - a. All students, including transfer students, must take at least 12 credit hours, including a minimum of two credit hours (6 class hours) in laboratory work, within the Biology Department at UMASS/Boston. These courses will be at the 300 level or above and include the following 300-level Biochemistry courses (383/385 and 384/386). Biology 444, 478-479, 672-673 and any/all Biochem courses other than those listed above do not fulfill this requirement (e.g., Biochem 471-472 and 491-492). Moreover, organic chemistry, (Chem 251/252, 255/256) DOES NOT count towards the residency requirement, notwithstanding that they can count towards the fulfillment of the overall minimum of 20 credits upper-level bio courses. The Bio major residency requirement, therefore, can only be satisfied by taking upper-level (300+) biology courses (including a minimum of two upper-level lab credits).
  - b. Students may NOT take a non-lab course (lecture-only version) as a repeat if the original course taken included the lab component and vice versa. Students cannot receive credit for both versions and as such, the second course will be considered an illegal repeat.
  - c. All students, including transfer students, who have not completed the lab portions of Cell Biology (Bio 210) and/or Genetics (Bio 252), must then take one and/or two additional upper-level labs at the 300 level to replace the missed lab experience and satisfy the requirements of the major.
  - d. After passing a course, no student can repeat a course for a better grade outside of the university and then transfer that grade in to be counted toward their degree program.
4. **ORGANIC CHEMISTRY FOR 8 CREDITS OF UPPER-LEVEL BIOLOGY** - Students may use up to eight (8) of the possible 10 organic chemistry credits in partial satisfaction of their upper-level (300+) biology courses. However, note that only one credit from each two-credit organic chemistry lab can be used to reach that eight-credit maximum. That is, only one credit from each two credit Chem 255 and 256 labs can be applied toward the upper-level biology major requirement. *\*\*Must pass Chem 116/118 with a C- or better to enroll in Chem 251/255. Must pass Chem 251/255 with a C- or better to enroll in Chem 252/256\*\**
5. **BIOLOGY GPA 2.0** - To graduate with a Biology Major, students must have a minimum cumulative 2.0 GPA in all biology courses taken to satisfy the major above the 100 level.

6. **PHYSICS REQUIREMENTS** - Students may now take Physics 107 & 171 with 108 & 172 (non-calculus-based) OR Physics 113 & 181 with 114 & 182 (calculus-based). Either set of lectures and corresponding labs will fulfill the biology Physics requirement. However, you CANNOT take the 107/171 combo and then take 114/182. *\*\*Must pass Physics 107/171 or 113/181 with a C- or better to enroll in Physics 108/172 or 114/182\*\**
7. **HONORS IN BIOLOGY** - The Biology Faculty may award departmental honors to students who have completed the following requirements:
  - a. Minimum GPA requirements: 3.0 overall AND 3.0 within the Biology Major (as calculated on the Degree Audit)
  - b. Enrollment in at least one semester of Independent Study (Bio 478/479) for three credits
  - c. Oral presentation (poster presentation) and a completed written thesis submitted to the department
  - d. **Please note:**

To recognize achievement in research, the Biology Department confers honors to some of its graduating seniors. Honors in Biology differs from honors in other programs and from the Honors College. Students who are majoring in biology are eligible for honors in biology as described by the requirements and criteria below. Students majoring in other departments/programs, such as biochemistry, must meet the requirements of their program/department to earn honors in their department/program. It is the major of the student candidate, not the department/program affiliation of the research mentor, which dictates the specific requirements for earning honors. To receive honors in biology, a student must engage in supervised research while taking at least 3 credits of independent study (BIOL 478 or 479 or BIOL 444). The mentor supervising the undergraduate research may be either a UMass Boston faculty member in biology, chemistry, the School for the Environment, or another related discipline -- or an off-campus scientist with a UMass Boston biology faculty liaison. Shortly before graduation (spring or fall), the biology honors candidate presents the research in a poster session organized by the Biology Department. The honors candidate also presents the research in a written honors thesis that is submitted to the Biology Department one month after the poster session.

The honors student must also perform well in classes. A cumulative grade point average of 3.0 or better in all courses, and a cumulative grade point average of 3.0 or better in the Biology major, as calculated in the degree audit, are required for honors in biology. The required GPAs must be achieved in the student's penultimate semester since GPA eligibility for honors in biology is determined before the finish of the student's final semester.

Two months before graduation, the Biology Honors Committee screens potential candidates for honors in biology to ensure that both the GPA and research requirements are met. The final vote approving honors in biology is made at a special end-of-semester meeting of the entire biology faculty immediately following the poster presentations.

8. **EXEMPTION FROM GENERAL BIOLOGY (MINIMUM CLEP/AP SCORES)** - CLEP: The Biology Department accepts the CLEP exam with a score of 50 or above. Students meeting this requirement will be exempt from General Biology 111 and 112 and will receive six credits toward graduation.
9. **Advanced Placement (AP)** - Students with a score of three on the AP Biology exam are exempt from Bio 111 and 112; those with an AP score of four or higher are exempt from Bio 111 and 112 and receive eight credits.

NOTE: once the CLEP/AP waivers are in force, students cannot later take Bio 111-112. If those courses are taken, the CLEP/AP credits are forfeited.