

Minor in Quantitative Biology - Minimum Requirements

	BIOL CORE COURSES (30 credits; 7 upper-level)	Pre-requisites/Co-requisites	Credits
☐	BIOL 140 - Foundations of Biology: Ecology & Evolution	MATH 150 or higher or placement in MATH 151	4
☐	BIOL 141 - Foundations of Biology: Cells, Energy & Organisms	MATH 150 or higher or placement in MATH 151	4
☐	BIOL 302 - Molecular & General Genetics	BIOL 140, BIOL 141, and MATH 150 or higher or placement in MATH 151. Pre-/Co- Req CHEM 102 or CHEM 120.	4
☐	STAT 350 Statistics with Applications in the Biological Sciences OR STAT 355 - Introduction to Probability and Statistics for Scientists and Engineers	MATH 150 or higher MATH 152	4
☐	MATH 151 - Calculus and Analytic Geometry I	MATH 150	4
☐	MATH 152 - Calculus and Analytic Geometry II	MATH 151 or MATH 141 or MATH155B	4
☐	MATH 221 - Introduction to Linear Algebra	MATH 141 or MATH 151 or MATH 380	3
☐	MATH 355 - Biomathematics	MATH 152 and MATH 221	3
	ELECTIVES (Choose any combination of courses for 6 credits)	Pre-requisites/Co-requisites	Credits
☐	BIOL 303 - Cell Biology	BIOL 140, BIOL 141, BIOL302, CHEM102, and MATH 150 or higher or placement into MATH 151.	3
☐	BIOL 312L - Modeling in the Life Sciences	BIOL 300L, and (STAT 350 or STAT 355 or MATH 151 or MATH 155)	2
☐	BIOL 313 - Introduction to Bioinformatics and Computational Biology	MATH 151, and either BIOL 141 or CMSC 104	3
☐	BIOL 410 - Modeling in the Life Sciences	BIOL 140, BIOL 302, BIOL 303, CHEM 101/101H, (STAT 350 or STAT 355 or MATH 151 or MATH 155), and ENG 100	4
☐	BIOL 415 - Systems Biology	BIOL 303 and (BIOL 313 or CMSC 201 or MATH 152)	4
☐	BIOL 442 - Developmental Biology	BIOL 302 and BIOL 303	3
☐	BIOL 445 - Signal Transduction	BIOL 302 and BIOL 303	4
☐	BIOL 466 - Population & Conservation Genetics	BIOL 140, BIOL 302, BIOL 303, and (STAT 350 or STAT 355)	4
☐	BIOL 483 - Evolution: From Genes to Genomes	BIOL 140, BIOL 302, BIOL 303, (STAT 350 or STAT 355), and ENGL 100	4
☐	BIOL 495 - Seminar in Bioinformatics	BIOL 303, BIOL313, BIOL430, and CMSC 202.	2 - 4

Important Notes:

- 1) The Quantitative Biology minor may NOT be taken with a major in Biological Sciences (BIOL BA or BS), Biochemistry & Molecular Biology (BIOC), or Bioinformatics and Computational Biology (BINF) because of substantial overlap in requirements.
- 2) At least two of the courses used to fulfill the Quantitative Biology minor must not be used to fulfill course the requirements of another major, minor or certificate.
- 3) Students must earn a “C” or better in all required courses. A course taken on a P/F basis will not count toward the minor.
- 4) At least half of the courses required for the minor must be completed at UMBC.
- 5) The Biological Sciences Department evaluates completion of minor 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.
- 6) Under exceptional circumstances, the Department may waive or alter a 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/>.