BIOLOGY (B.A.)

The **BA in Biology** is intended to provide students with knowledge and skills in the field of Biology while also allowing students to minor in another topic area in order to receive marketable training and skills that will offer them pathways into professions as diverse as Medical Technology, Pharmaceutics, Bio-Technology, Law, Government Service, Community Health, or Science Communication.

For details about this program, including program description, admission requirements, and contact information, click here (https://www.montclair.edu/academics/programs/ba-biology/).

Unless otherwise noted, 120 credits of coursework is required for a baccalaureate degree with a minimum 2.0 overall GPA, and a minimum 2.0 major GPA.

Degree Requirements Overview

Code	Title	Credits
New Student Seminar		1
SEEDS General Education Requirements		24-27
Major Requirements		70-74
Free Electives		25-18
Total Credits		**120**

Major Requirements

Code	Title	Credits
Major Core		
BIOL 112	Principles of Biology: Introduction to the Cell	4
BIOL 113	Principles of Biology: Organisms and Diversity	4
BIOL 213	Introduction to Ecology	4
BIOL 230	Cell and Molecular Biology	4
BIOL 315	Science Literacy and Communication	3
BIOL 492	Senior Colloquium	1
Community Engaged Service Learning Requirement		
BIOL 409	Externship in Biological Research (Co-operative Education)	4
Biology Electives		
Complete 10 credits from the list below.		10
Additional STEM Elective		
Complete one course:		3-4
CHEM 230	Organic Chemistry I	
CSIT 104	Python Programming I	
PHYS 193	College Physics I	
Collateral Requirements		
CHEM 120	General Chemistry I	4
CHEM 121	General Chemistry II	4
MATH 122	Calculus I	4
STAT 230	Data Science and Statistics	3
Required Minor		
Choose any minor outside of the College of Science and Mathematics. Excluded minors include the minors in Biology, Chemistry, Computer Science, Data Science, Earth and Environmental Science, Geographic Information Science, Mathematics, Physics, Sustainability Science, or Urban Studies		18-21
Total Credits		**70-74**

Electives

Code	Title	Credits
BIOL 300	Environmental Biology and Related Controversial Issues	3
BIOL 319	Genes, Brains, and Behavior	4
BIOL 320	Social Neurobiology	3
BIOL 330	Introduction to Animal Behavior	3
BIOL 350	Microbiology	4
BIOL 351	Introduction to Aquatic Ecology	4
BIOL 360	Introduction to Bio-Imaging	3
BIOL 370	Principles of Ecology	3
BIOL 380	Genetics	4
BIOL 404	Plant and Animal Histological Techniques	3
BIOL 405	Cell Culture	3
BIOL 406	Scanning Electron Microscopy	4
BIOL 410	Toxicology	3
BIOL 411	Introduction to Transmission Electron Microscopy	4
BIOL 415	Population Genetics	3
BIOL 417	Evolutionary Biology	3
BIOL 418	Biology Independent Research	1-4
BIOL 420	Economic Botany	3
BIOL 422	Community Ecology	3
BIOL 425	Elementary Plant Physiology	3
BIOL 426	New Jersey Flora	4
BIOL 429	Herpetology	4
BIOL 430	Ornithology	4
BIOL 431	Entomology	3
BIOL 432	Medical Entomology	3
BIOL 433	Developmental Biology	4
BIOL 434	Molecular Biology	3
BIOL 435	Experimental Molecular Biology	3
BIOL 436	Phylogenetic Zoology	4
BIOL 439	Biology of Animal Parasites	3
BIOL 440	Gross Mammalian Anatomy	4
BIOL 441	Comparative Anatomy of Vertebrates	4
BIOL 442	Human Physiology	4
BIOL 443	Vertebrate Embryology	4
BIOL 444	Cell Physiology	3
BIOL 445	Immunology	3
BIOL 446	Endocrinology	3
BIOL 447	Fundamentals of Pharmacology	3
BIOL 450	Medical Microbiology	3
BIOL 451	Comparative Animal Physiology	3
BIOL 457	Virology	3
BIOL 458	Microbial Genetics	3
BIOL 460	Biological Oceanography	3

BIOL 461	Aquatic Ecology	3
BIOL 467	Biology of the Fishes	4
BIOL 468	Neurobiology	3
BIOL 475	Medical Genetics	3
BIOL 476	Biology of Cancer	3
BIOL 480	Research Community I: Organism Biology	4
BIOL 481	Research Community II: Organism Biology	4
BIOL 482	Research Community I: Molecular Biology	4
BIOL 483	Research Community II: Molecular Biology	4
BIOL 484	Research Community I: Ecology	4
BIOL 485	Research Community II: Ecology	4
BIOL 486	Special Topics in Biology	3-4
BIOL 487	Statistical Genomics	3
BIOL 488	Special Topics in Cell and Molecular Biology	3-4
BIOL 489	Special Topics in Organismal Biology	3-4
BIOL 490	Senior Seminar in Biology	3
BIOL 491	Research in Biology Literature	1
BIOL 492	Senior Colloquium	1
BIOL 493	Molecular Ecology	3
BIOL 495	Special Topics in Ecology	3
BIOL 497	Genomics	3

New Student Seminar

Code	Title	Credits
Students in the Adult Learner program must take GNED 100.		
Complete one course from the following. Some courses may be restricted by major. Consult with an academic advisor.		1
ADVS 198	Pathways to Success	
CHEM 190	Freshman Seminar in Chemistry	
FYS 100	First Year Seminar	
GNED 100	Adult Academic Success Seminar	
GNED 199	New Student Seminar	
HPEM 199	Freshman Seminar in Health and Physical Education	
IDS 155	Pathways to Adult Learning	
JUST 199	New Student Seminar	
MATH 102	New Student Experience for Mathematical Sciences	
MUGN 199	Freshman Seminar for Music Majors	
NURS 199	Introduction to Nursing	
POLS 199	Freshman Seminar in Political Science and Law	

SEEDS General Education Requirements

Click here for a list of courses that fulfill the SEEDS requirements. (http://catalog.montclair.edu/programs/seeds-general-education-requirements/)

Code	Title	Credits
Foundations		
Effective Writing I		
Complete one Effective Writing I course.		3
Effective Writing II		
Complete one Effective Writing II course.		3
Interactive Communication		
Complete one Interactive Communication course.		3
Quantitative Reasoning		
Fulfilled by MATH 122 in the major.		
Political and Civic Life		
Complete one Political and Civic Life course.		3
World Language		
Complete two sequential classes in one World Language when starting at the Beginner I or Beginner II level. Complete one class when starting at the Intermediate/Advanced Level.		3-6
Exploration		
Complete one course from four different Exploration categories:		9
Analyzing Cultures and Societies		
Creative Expression		
Ethical Inquiry		
Historical Thinking		
Literary and Artistic Analysis		
Scientific Reasoning		
Fulfilled by BIOL 112 in the major.		
Total Credits		**24-27**

Recommended Roadmap to Program of Study Completion

This recommended degree plan is provided as an outline for students to follow in order to complete their program of study requirements within **four years** and 120 credits. This plan is a recommendation and must be used in consultation with their academic advisor. Important note: Students should be aware this plan assumes no pre-requisite coursework is required. If pre-requisite coursework is needed, students may have additional requirements to fulfill which do not appear on the plan.

First Year

Fall	Credits	Spring	Credits
BIOL 112 (Fulfills SEEDS: Exploration 1 - Scientific Reasoning)	4	BIOL 113	4
MATH 122 (Fulfills SEEDS: Quantitative Reasoning)	4	STAT 230	3
SEEDS: Effective Writing I	3	SEEDS: Effective Writing II	3
New Student Seminar	1	SEEDS: Interactive Communication	3
SEEDS: World Language 1	3	SEEDS: World Language 2 or Free Elective	3
	15		**16**

Second Year

Fall	Credits	Spring	Credits
BIOL 213	4	BIOL 230	4
CHEM 120	4	CHEM 121	4
SEEDS: Political and Civic Life	3	SEEDS: Exploration 2	3
Minor Requirement	3	SEEDS: Exploration 3	3
	14		**14**

Third Year

Fall	Credits	Spring	Credits
Biology Elective	3	Biology Elective	3
Additional STEM Collateral	4	SEEDS: Exploration 4	3
BIOL 315	3	Free Elective	3
Minor Requirement	3	Free Elective	3
Minor Requirement	3	Minor Requirement	3
	16		**15**

Fourth Year

Fall	Credits	Spring	Credits
Biology Elective	4	BIOL 492	1
Minor Requirement	3	Minor Requirement	3
Free Elective	3	Free Elective	3
BIOL 409	4	Free Elective	3
		Free Elective	3
		Free Elective	3
	14		**16**

Total Credits 120