BIOLOGICAL SCIENCES, B.S./ BIOLOGICAL SCIENCES, M.S.

Contact

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Mission

The mission of the School of Biological Sciences at the University of New England is to enable students to understand the real-world relevance of the biological sciences, foster scientific literacy and critical thinking skills, and lay the foundation for lifelong learning and meaningful, productive contributions to society.

The mission of the Master of Science in Biological Sciences program is to prepare outstanding graduate students for careers or further training in science, technology, and education by providing an advanced knowledge base and a working knowledge of research methods in the biological sciences.

Program Description

The Accelerated BS/MS in Biological Science offers advanced classroom training and research experience to students interested in a wide variety of biological topics, including ecology, molecular biology, microbiology, and physiology. Students are responsible for completing both the BS in Biological Science and the MS in Biological Science, as detailed in both of those academic catalog programs.

A maximum of 12 course credits at the 500-graduate level can double count towards both the undergraduate and graduate degree requirements.

Program Goals

- Provide a knowledge base in the biological sciences that is deeper than the typical undergraduate experience
- Instill outstanding research skills and a working knowledge of the scientific method by participating in high-quality research
- Develop scientific communication skills through writing and oral presentations

Transfer Credit

Students may not transfer credits from other graduate programs. However, if the student has already taken a similar required class at the graduate level, they may substitute another class, including thesis and research credits, in consultation with their major professor, and must receive a grade of B- or P or better for it to count toward their graduate degree.

Admissions

See Undergraduate Admissions (https://catalog.une.edu/undergraduate/admissions/) for more information.

Financial Information

Tuition and fees for subsequent years may vary. Other expenses include books and housing. For more tuition and fee information, please consult this catalog's Financial Information (https://catalog.une.edu/undergraduate/financial-information-undergraduate-programs/) section.

Curricular Requirements

Students are responsible for completing both the BS in Biological Science and the MS in Biological Science, as detailed in both of those academic catalog programs.

A maximum of 12 course credits at the 500-graduate level can double count towards both the undergraduate and graduate degree requirements.

Biological Sciences, B.S. Requirements Curricular Requirements

Code	Title	Hours
Nor'easter Core Requirements		**40**
Nor'easter Core Requirements (https://catalog.une.edu/undergraduate/core-curriculum/)		40
Program Required Courses		
BIO 105 & 105L	Biology I: Ecology/Evolution and Bio I: Ecology/Evolution Lab	4
BIO 106 & 106L	Biology II: Cellular/Molecular and Bio II:Cellular/Molecular Lab	4
BIO 214 & 214L	Genetics and Genetics Lab	4
BIO 400-level capstone [1]		3-4
CHE 110 & 110L	General Chemistry I and General Chemistry I Lab	4
or CHE 150	University General Chemistry I	
CHE 111 & 111L	General Chemistry II and General Chemistry II Lab	4
or CHE 151	University General Chemistry II	
CHE 201 & 201L	Organic Chemistry I and Organic Chemistry I Lab	4-5
or CHE 250 & 250L & 250S	University Organic Chemistry I and University Organic Chemistry I Lab and University Organic Chemistry I Lab Lecture	
CHE 202 & 202L	Organic Chemistry II and Organic Chemistry II Lab	4-5
or CHE 251 & 251L & 251S	University Organic Chemistry II and University Organic Chemistry II Lab and University Organic Chemistry II Lab Lecture	
or CHE 310 & 310L	Fundamentals of Biochemistry and Biochemistry Lab	
Select one of the following:		3
MAT 150	Statistics for Life Sciences (Biological Sciences Core Program and Cellular and Molecular Biology concentration)	
MAT 151	Statistics for Environmental Sciences (Ecology and Evolutionary Biology concentration)	
MAT 190	Calculus I	4
PHY 110	General Physics I w/Lab	4

or PHY 210	University Physics I	
PHY 111	General Physics II w/Lab	4
or PHY 211	University Physics II	
Select one course from each topic area below: [2]		
Cellular & Molecular Area Courses		
BIO 203 & 203L	and (Histology w/Lab)	
BIO 365	Immunology	
BIO 370	Cell & Molecular Biology	
Ecology & Evolutionary Biology Area Courses		
BIO 307	Conservation Genetics	
BIO 328	Human Evolution	
BIO 329	Disease Ecology	
BIO 333	Evolution	
BIO 350 & 350L	Ecology and Ecology Lab	
MAR 335 & 335L	Animal Behavior and Behavioral Ecology and Animal Behav/Behav Ecology Lab	
Organismal Biology Area Courses [2]		
BIO 204 & 204L	Parasitology and Parasitology Lab	
BIO 232 & 232L	Microbiology and Microbiology Lab	
or BIO 234 & 234L	Environmental Microbiology and Environmental Microbiology Lab	
BIO 235 & 235L	Winter Natural History and Winter Natural History Lab	
BIO 254	Medicinal Plant Biology	
BIO 305 & 305L	Mammalogy and Mammalogy Lab	
BIO 306	Virology	
BIO 314 & 314L	Herpetology and Herpetology Lab	
BIO 319 & 319L	Ornithology and Ornithology Lab	
MAR 320 & 320L	Invertebrate Zoology and Invertebrate Zoology Lab	
MAR 331 & 331L	Biology of Fishes and Biology of Fishes Lab	
Open Elective Courses (Students complete open elective credits as necessary to meet the University's 120-credit minimum for graduation. The total number of elective credits required will depend on the student's completed program, core, and other degree requirements.)		
Total Hours		**126-129**

1 Course is to be selected in consultation with your faculty advisor. Not satisfied by BIO 410 Biological Sciences Research, BIO 495 Adv Biological Sci Internship or Internship/Research Courses.

2 Topic Area courses are to be selected in consultation with your faculty advisor.

Please note: While some courses can fulfill both core and program requirements, the credits earned do not count twice towards the minimum total required credits for the degree.

BIO 290 Biological Topics may fulfill biology area requirements depending on the subject matter and advisor permission.

Additional Guidelines

Students wishing to pursue teacher certification in Life Science can complete a double major with Biological Sciences and Middle and Secondary Education or a major in Middle and Secondary Education and a concentration in Biological Sciences. For more information, see the Middle and Secondary Education catalog page. (https://catalog.une.edu/programs/middle-secondary-education-certification-bs/)

Concentrations

Biological Sciences students who wish to narrow their focus beyond the core program can elect a concentration in either Cellular and Molecular Biology or Ecology and Evolutionary Biology. Please see the Curricular Requirements section for details.

Concentration Options

Optional Concentration in Cellular and Molecular Biology Required Courses

Code	Title	Hours
BIO 105 & 105L	Biology I: Ecology/Evolution and Bio I: Ecology/Evolution Lab	4
BIO 106 & 106L	Biology II: Cellular/Molecular and Bio II:Cellular/Molecular Lab	4
BIO 214 & 214L	Genetics and Genetics Lab	4
BIO 370	Cell & Molecular Biology	3
BIO 407	Developmental Biology	3
BIO 400-level capstone course [1]		3-4
Ecology & Evolutionary Biology Area Course [2]		3-4
Organismal Biology Area Course [2]		3-4
Cognate Chemistry, Physics, and Math Courses (same as above program requirements)		31-33
Total Hours		**58-63**

1 Course is to be selected in consultation with your faculty advisor. Not satisfied by BIO 410 Biological Sciences Research, BIO 495 Adv Biological Sci Internship or Internship/Research Courses.

2 Topic Area courses are to be selected in consultation with your faculty advisor and can be found in the Curricular Requirements section.

Optional Concentration in Ecology and Evalutionary Biology Required Courses

Code	Title	Hours
BIO 105 & 105L	Biology I: Ecology/Evolution and Bio I: Ecology/Evolution Lab	4
BIO 106 & 106L	Biology II: Cellular/Molecular and Bio II:Cellular/Molecular Lab	4
BIO 214 & 214L	Genetics and Genetics Lab	3-4
or BIO 322	Comparative Animal Physiology	
BIO 333	Evolution	3
BIO 350 & 350L	Ecology and Ecology Lab	4
BIO 400-level capstone course [1]		3-4
Organismal Biology Topic Area [2]		3-4

Ecology & Evolutionary Biology Area Course or a second Organismal Biology Area Course [2]	3-4
Cognate Chemistry, Physics, and Math Courses (same as above program requirements)	31-33
Total Hours	**58-64**

1 Course is to be selected in consultation with your faculty advisor. Not satisfied by BIO 410 Biological Sciences Research, BIO 495 Adv Biological Sci Internship or Internship/Research Courses.

2 Topic Area courses are to be selected in consultation with your faculty advisor and can be found in the Curricular Requirements section.

Please note: While some courses can fulfill both core and program requirements, the credits earned do not count twice towards the minimum total required credits for the degree.

You can find more details about the Biological Sciences, B.S. program here. (https://catalog.une.edu/programs/biological-sciences-bs/)

Biological Sciences, M.S. Requirements

Curricular Requirements

Code	Title	Hours
Program Required Courses		
BIO 503	Research Methods	3
BIO 516	Responsible Conduct Research	1
BIO 519	Scientific Literacy and Literature Review	3
BIO 590	Research & Thesis (repeated for additional credit)	26
Three credits of 500-level course(s) with the BIO prefix [1]		
Total Hours		**33**

1 Biological Sciences M.S. students may request to substitute research credits for elective coursework with approval from their thesis advisor. A formal written request must be submitted to the Graduate Program Committee (GPC), including a justification for the request. If approved by the GPC, students will submit a Course Substitution Form (available on the Office of the Registrar's webpage (https://une1.sharepoint.com/sites/Registrar/)), which requires approval by the School of Biological Sciences Academic Director and by the CAS Dean, to the Registrar in preparation for graduation.

You can find more details about the Biological Sciences, M.S. program here. (https://catalog.une.edu/programs/biological-sciences-ms/)

Academic and Technical Standards

Satisfactory Academic Progress

Accelerated BS/MS in Biological Science, a student's cumulative graduate GPA must be a minimum of 3.0. A student whose GPA falls below 3.0 or who receives a grade below B- in any course taken for graduate credit will be placed on academic probation.

Program Completion Timeline

Students have a maximum of five years to complete the graduation requirements for both the undergraduate and M.S. degrees. After two academic years (fall and spring terms), students who have completed their coursework but are still completing their theses are required to enroll in a minimum of one Thesis Writing/Data Analysis credit hour (BIO 595) per semester to remain in the program and the student needs to demonstrate satisfactory progress towards their degree completion. In such a case, the student should contact Student Financial Services to determine whether this change from full-time status affects their financial aid.

Probation/Dismissal

A student engaged in graduate (500-level) coursework whose GPA for any semester falls below 3.0, or whose cumulative GPA is below 3.0, or who receives a class grade below a B- for any class taken for graduate credit is automatically placed on probation. A student placed on academic probation will be granted one fall or spring semester to raise their cumulative GPA to 3.0 or above, will be required to achieve a minimum GPA of 3.0 for the semester, and cannot receive a second-course grade below B-. Any student who fails to meet these criteria will be considered for dismissal by the School of Biological Sciences and the Dean of the College of Arts and Sciences.

Learning Outcomes

- Students will demonstrate expertise in their thesis research field
- Students will demonstrate publication-level proficiency in written professional oral communication skills
- Students will demonstrate mastery of the concepts and principles of the Biological Sciences
- Students will demonstrate an understanding of research design and have the ability to carry out a research project