

MEDICAL BIOLOGY, B.S.

Contact

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Mission

At the heart of our mission lies a dedication to nurturing a vibrant learning environment where students are active participants and collaborators. We believe in the transformative power of experiential learning, in guiding students through hands-on experiences that bridge the gap between theory and practice, and in preparing them to navigate real-world challenges with confidence and insight. We strive to create welcoming spaces where every voice is heard and valued. Grounded in academic rigor and scientific integrity, we equip students with the tools and knowledge to critically engage with complex biological concepts and global issues. As stewards of both knowledge and the environment, we inspire a sense of responsibility, and encourage innovation for a healthier planet.

Our Core Values

Student Centeredness: Every decision we make is predicated by the question, "what is best for our students?"

Community and Belonging: We celebrate the many backgrounds, perspectives, and experiences within our community. By promoting a culture of belonging and mutual respect, we strive to create a supportive and welcoming environment where all individuals can thrive and contribute.

Experiential Learning: Students learn best by doing. We value hands-on experiences and reflection so that students can connect theories and knowledge learned in the classroom to real-world situations.

Information Literacy: We strive to instill students with knowledge and skills needed to develop a data-driven understanding of biological processes and their global implications.

Academic Rigor: We embrace uncompromising standards of academic rigor and strive for excellence in all facets of teaching and research.

Scientific Integrity: We adhere to the highest professional and ethical standards when teaching, conducting, and reporting research.

Environmental Stewards: We promote environmental stewardship by fostering an understanding of biological systems and their susceptibility to human impacts, and by recognizing our shared responsibility for planetary health.

Collaboration: Scientific progress thrives when minds come together. We strive to create a collaborative environment where students and instructors come together to engage in teamwork through shared learning experiences and joint research projects.

Program Description

The medical biology major is designed to provide a strong foundation in the biological sciences for students who ultimately pursue careers in human medicine, dentistry, other health professions (e.g. physical therapy), biomedical research, or the biotechnology industry.

The Medical Biology program provides students with a solid foundation in the biological sciences at the molecular, cellular, tissue, organ, and organismal levels. In addition to the comprehensive introduction to general biology, the courses offered in this track introduce the student to the fields of physiology, biochemistry, cellular biology, and genetics. This track also includes those courses that are pre-requisite courses for entrance into medical and dental schools and graduate programs in Physical Therapy, Occupational Therapy, and other health professional programs. The many laboratory-based courses in this track allow students to become familiar with the most up-to-date laboratory techniques used for biological research, an advantage for students who wish to enter graduate schools in the biomedical sciences or to work in the biotechnology industry. Finally, students in this track have the opportunity to complete off-campus internships for college credit (e.g. in a hospital, clinical, or laboratory setting).

This program is designed for pre-medical students, pre-dental students, pre-veterinary students, students who will eventually enter graduate school in the biological sciences, and students who will eventually enter the biotechnology industry.

Honors Program

We offer qualified students the option of graduating with Honors. This includes significant research, scholarship or creative activity under the direction of a faculty member. Interested students should consult with their advisor.

Transfer Credit

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

Admissions

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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

Code	Title	Hours
Nor'easter Core Requirements		
Nor'easter Core Requirements (https://catalog.une.edu/undergraduate/core-curriculum/)		40
Program Required Courses		
BIO 105 & BIO 150L	Biology I: Ecology/Evolution and (Biology I: Ecology/Evolution w/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 245 & 245L	Gen Prin Anat/Phys/Pathophys I and Gen Prin Anat/Phys/Path I Lab	4
BIO 345 & 345L	Gen Prin Anat/Phys/PathophysII and Gen Prin Anat/Phys/Path II Lab	5
BIO 370	Cell & Molecular Biology	3
Select one of the following:		4
CHE 110 & 110L	General Chemistry I and General Chemistry I Lab	
CHE 151 & 151L	University General Chemistry II and University General Chemistry II Lab	
Select one of the following:		4-5
CHE 201 & 201L	Organic Chemistry I and Organic Chemistry I Lab	
CHE 250 & 250L & 250S	University Organic Chemistry I and University Organic Chemistry I Lab and University Organic Chemistry I Lab Lecture	
Select one of the following:		4-5
CHE 202 & 202L	Organic Chemistry II and Organic Chemistry II Lab	
CHE 251 & 251L & 251S	University Organic Chemistry II and University Organic Chemistry II Lab and University Organic Chemistry II Lab Lecture	
CHE 310 & 310L	Fundamentals of Biochemistry and Biochemistry Lab	4
MAT 150	Statistics for Life Sciences	3
MAT 190	Calculus I	4
PHY 110 or PHY 210	General Physics I w/Lab University Physics I	4
PHY 111 or PHY 211	General Physics II w/Lab University Physics II	4
BIO 200-level or higher elective ¹		3-4
BIO 400-level or higher capstone course ²		3-4
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.)		19
Total Hours		120-124

¹ Not satisfied by BIO 210 Introduction to Bio Research, BIO 295 Biological Science Internship or Internship/Research/Speaker Series.

² Not satisfied by BIO 410 Biological Sciences Research, BIO 495 Adv Biological Sci Internship or Internship/Research courses.

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.

Graduation Requirements

A minimum grade of C- must be achieved in all BIO, CHE, PHY, and MAT courses used to fulfill the requirements of the Medical Biology major. A 2.00 cumulative average in sciences is a requirement for graduation in any of the programs in the School of Biological Sciences.

Learning Outcomes

The expected learning outcomes for students graduating with a Bachelor of Science degree from the School of Biological Sciences:

1. Process of Science - Scientific Thinking and Information Literacy:
 - a. Explain how science generates knowledge of the natural world, and locate, interpret, and evaluate scientific information.
 - b. Apply science process skills to address a research question in a course-based or independent research experience, which includes being able to: pose testable questions and hypotheses to address gaps in knowledge, plan, evaluate, and implement scientific investigations, and interpret, evaluate, and draw conclusions from data to make evidence-based arguments about the natural world.
 - c. Recognize the important roles that scientific models and simulations of many different types (conceptual, mathematical, physical, etc.) play in predicting and communicating biological phenomena, making inferences, and solving problems.
2. Interdisciplinary and Communicative Nature of Science:
 - a. Connect scientific knowledge by integrating concepts across multiple fields of biology (e.g., cell and molecular biology, ecology and evolution, anatomy, physiology) and other STEM disciplines (e.g., chemistry, physics) in order to generate interdisciplinary solutions to real-world problems.
 - b. Communicate ideas, data, and findings clearly and accurately with others to enable productive teamwork among people of diverse backgrounds, skill sets, and perspectives, which includes being able to:
 - i. provide and respond to constructive feedback to improve individual and team-based work while reflecting on your learning, performance, and achievements.
 - ii. critically analyze ethical issues in the conduct of science while considering the potential impacts of outside influences (historical, cultural, political, technological, etc.) on how science is practiced.