

# LABORATORY SCIENCE, B.S.

## Contact

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## Mission

Chemistry and physics are fundamental sciences that touch every aspect of our lives and the world around us. Chemistry is the study of matter: its chemical and physical properties, the chemical and physical changes it undergoes, and the energy changes that accompany those processes. Chemistry often is referred to as the central science; it rests upon the foundation of mathematics and physics and in turn is the essential basis for the life sciences such as biology and medicine. Chemistry is largely an experimental science, and has applications in such diverse areas of research as the development of new drugs, the search for solutions to problems of environmental pollution, and the derivation of alternative energy sources. Much cutting-edge research in biology and medicine is being carried out at the level of atoms and molecules, the particles of matter upon which the study of chemistry is based.

Physics, too, is the study of matter and energy, viewed from a different perspective. To understand living systems and the universe in which we live requires an understanding of the chemical and physical principles that operate within them.

In addition to offering majors in Chemistry, Biochemistry and Laboratory science, and minors in Chemistry, Biochemistry, and Biophysics, the department fills a significant role for students in other programs through its introductory courses in chemistry and physics. Because of the fundamental roles of chemistry and physics in the biological, environmental, and health sciences, students in these programs benefit from the conceptual, quantitative, problem-solving, and communication skills stressed in the introductory courses, which form the foundation for later courses in the students' majors.

## Major Description

The Laboratory Science (LS) major is designed to prepare graduates for work in a variety of modern laboratory settings, ranging from biotechnology labs to quality control labs to academic, medical, or industrial research labs. The program includes a broad spectrum of laboratory courses in chemistry, biochemistry, and biology so that the graduate will evolve a comprehensive repertoire of relevant lab skills that can be applied to careers across chemical, biological, and medical industries. With careful selection of elective courses, LS graduates wishing to become medical technologists will be well-prepared for acceptance into accredited hospital internship programs in medical technology. Recent LS graduates have been successful in pursuing careers in industry and studies in graduate programs.

## 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.

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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
<b>Nor'easter Core Requirements</b>		
Nor'easter Core Requirements ( <a href="https://catalog.une.edu/undergraduate/core-curriculum/">https://catalog.une.edu/undergraduate/core-curriculum/</a> )		40
<b>Program Required Courses</b>		
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 232 & 232L	Microbiology and Microbiology Lab	4
BIO 365 & 365L	Immunology and (w/Lab)	4
BIO 370	Cell & Molecular Biology	3
CHE 150 & 150L	University General Chemistry I and University General Chemistry I Lab <sup>1</sup>	4
CHE 151 & 151L	University General Chemistry II and University General Chemistry II Lab <sup>1</sup>	4
CHE 250 & 250L & 250S	University Organic Chemistry I and University Organic Chemistry I Lab and University Organic Chemistry I Lab Lecture <sup>1</sup>	5
CHE 307 & 307L	Quantitative Analysis and Quantitative Analysis Lab	5
CHE 310 & 310L	Fundamentals of Biochemistry and Biochemistry Lab	4
CHE 417 & 417L	Instrumental Methods of Analysis and Instrumental Methods Lab	4
MAT 190	Calculus I	4
PHY 210	University Physics I <sup>1</sup>	4
Select a minimum of three courses from the following:		11-14
BIO 203 & 203L	and (Histology w/Lab)	
BIO 204 & 204L	Parasitology and Parasitology Lab	
BIO 245 & 245L	Gen Prin Anat/Phys/Pathophys I and Gen Prin Anat/Phys/Path I Lab	
BIO 345 & 345L	Gen Prin Anat/Phys/PathophysII and Gen Prin Anat/Phys/Path II Lab	

CHE 251 & 251L & 251S	University Organic Chemistry II and University Organic Chemistry II Lab and University Organic Chemistry II Lab Lecture <sup>1</sup>	
CHE 450	Advanced Biochemistry Lab	
PHY 211	University Physics II <sup>1</sup>	
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.) <sup>2</sup>		12
<b>Total Hours</b>		<b>120-123</b>

<sup>1</sup> Matriculated majors are expected to enroll in the University course sequences for general chemistry, organic chemistry, and physics. The following substitutions may be made with department permission: CHE 110 for CHE 150; CHE 111 for CHE 151; CHE 201 for CHE 250; CHE 202 for CHE 251; PHY 110 for PHY 210; and/or PHY 111 for PHY 211.

<sup>2</sup> Recommended Elective Courses are BIO 330/BIO 330L (if BIO 245/BIO 345 not selected), MAT 150, and MAT 195

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.

Students in this major can participate in the pre-health graduate school preparation tracks. (<https://catalog.une.edu/programs/science-prerequisites-health-professions/>)

## Academic and Technical Standards

A minimum grade of C- must be achieved in all required science and mathematics courses used toward graduation in laboratory science, and a 2.00 cumulative grade-point average in the sciences is a requirement for graduation.

## Learning Outcomes

Upon successful completion of the Laboratory Sciences major students will be able to:

- Describe and apply advanced information and concepts relevant to general laboratory science
- Demonstrate proficiency in safe laboratory practices and use of instrumentation standard to the discipline
- Clearly communicate information in both oral and written forms relevant to general laboratory science
- Work collaboratively in various team settings
- Compete for placement in graduate programs or employment relevant to the field of study