

# BIOLOGICAL SCIENCES (A.S.)

<https://manchester.unh.edu/program/as/biological-sciences>

## Description

Biology is the study of living organisms in both laboratory and field conditions. It concerns itself with questions of understanding the living world, its complex interrelationships, and the role of human beings within it.

The associate of science in biological sciences program at UNH Manchester is designed to serve either as a terminal degree or as a springboard for students interested in the life sciences, which include majors in biology, biotechnology, microbiology, zoology, plant biology, wildlife management, environmental conservation, biochemistry, and animal sciences. Employment opportunities in the public and private sectors include education; food, water, wastewater and other industrial laboratories; clinical laboratories; biotechnology; environmental research and monitoring; and health careers.

## Requirements

Students must complete a minimum of 64 credits to graduate. There are two tracks in the A.S. degree program at UNH Manchester: biology and microbiology.

## Biology Track Requirements

Code	Title	Credits
MATH 425 or MATH 424B	Calculus I Calculus for Life Sciences	4
PSYC 402	Statistics in Psychology <sup>1</sup>	4
BIOL 413	Principles of Biology I	4
BIOL 414	Principles of Biology II	4
CHEM 403	General Chemistry I	4
CHEM 404	General Chemistry II	4
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	5
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
BIOL 541	Ecology	4
GEN 604	Principles of Genetics	0 or 4
<b>Total Credits</b>		<b>43-47</b>

<sup>1</sup> Other statistics courses such as BIOL 528 Applied Biostatistics I or BUS 430 Introduction to Business Statistics may be used to satisfy this requirement.

## Microbiology Track Requirements

Students opting for the microbiology track must complete all courses listed in the biological sciences program with the exception of BIOL 541 Ecology. In addition, students must complete the following courses. From time to time, other microbiology courses may be offered. With approval of the Program Coordinator, they may substitute for courses within the Microbiology Track.

Code	Title	Credits
BMS 602 & BMS 603	Pathogenic Microbiology and Pathogenic Microbiology Laboratory	5
BMS #601	Bacteriology of Food	5
<b>Total Credits</b>		<b>10</b>

Note: Students preparing for professional or graduate programs may need to complete: CHEM 651 Organic Chemistry I/CHEM 653 Organic Chemistry Laboratory and CHEM 652 Organic Chemistry II/CHEM 654 Organic Chemistry Laboratory. These courses may substitute for CHEM 545 Organic Chemistry/CHEM 546 Organic Chemistry Laboratory and BMCB 658 General Biochemistry/BMCB 659 General Biochemistry Lab. Please consult your academic advisor.

For more information, contact [Kyle MacLea \(Kyle.MacLea@unh.edu\)](mailto:Kyle.MacLea@unh.edu), program coordinator, or contact the [Office of Admissions \(unhm.admissions@unh.edu\)](mailto:unhm.admissions@unh.edu), (603) 641-4150.

## Degree Plan

This degree plan is a sample and does not reflect the impact of transfer credit or current course offerings. UNH Manchester undergraduate students will develop individual academic plans with their professional advisor during the first year at UNH.

## Sample Course Sequence

Course	Title	Credits
<b>First Year</b>		
<b>Fall</b>		
UMST 401 or UMST 402	First Year Seminar or Transfer Seminar	1
ENGL 401	First-Year Writing	4
BIOL 413	Principles of Biology I	4
CHEM 403	General Chemistry I	4
Discovery Course		4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
MATH 425	Calculus I	4
BIOL 414	Principles of Biology II	4
CHEM 404	General Chemistry II	4
Discovery Course		4
<b>Credits</b>		<b>16</b>
<b>Second Year</b>		
<b>Fall</b>		
PSYC 402	Statistics in Psychology	4
CHEM 545 & CHEM 546	Organic Chemistry and Organic Chemistry Laboratory	5
BIOL 541	Ecology	4
HUMA 411 or HUMA 412	Humanities I or Humanities II	4
<b>Credits</b>		<b>17</b>
<b>Spring</b>		
BMCB 658 & BMCB 659	General Biochemistry and General Biochemistry Lab	5
BMS 503 & BMS 504	General Microbiology and General Microbiology Laboratory	5
GEN 604	Principles of Genetics	4

Discovery Course	4
<b>Credits</b>	<b>18</b>
<b>Total Credits</b>	<b>68</b>

## Student Learning Outcomes

A student successfully completing the Biological Sciences program will be able to:

- Understand the fundamentals of basic biological principles, concepts, and theories.
- Demonstrate the ability to evaluate, apply, and synthesize biological information and ideas.
- Be competent in basic biology and chemistry laboratory skills and with the use of common laboratory equipment and instrumentation.
- Demonstrate the ability to communicate technical information related to biological sciences related topics in scientific writing and oral presentations.
- Understand, analyze, and evaluate primary research literature involving biological sciences related topics.
- Understand and apply the process of the scientific method, including being able to formulate hypotheses, design and conduct experiments with adequate controls to test hypotheses, interpret and evaluate data, and draw conclusions.
- Gather, analyze, organize, evaluate, and present scientific data, including the use of technology to solve problems and communicate information.
- Demonstrate the ability to function as a member of a team.
- Compete effectively for entry-level employment and for admission to baccalaureate schools in their chosen area and be successful in these endeavors.