

Biology

Biology Degrees and Certificates

Biology, Associate in Science

This degree can lead to a baccalaureate degree in biology at accredited colleges and universities. It is appropriate for students interested in pre-professional programs, such as, biology, ecology, pharmacy, chiropractics, medical, dental, mortuary science, horticulture, veterinary and education. It may also apply to technician-level job opportunities when two years of academic preparation in biology are required. Electives should be selected based on the student's interest, the requirements of the transfer institution or technical-level vocation opportunities. It is strongly recommended that students entering the program have a minimum of one year of high school biology, chemistry and mathematics at an advanced level.

For additional information, please contact department chair, Kenneth Cabarle at (609) 343-5128 or kcabarle@atlanticcape.edu.

Upon completion of this program students will be able to:

- Demonstrate safe and environmentally friendly practices in a laboratory setting;
- Apply the scientific method in experimentation, collection and interpretation of data;
- Demonstrate proper use of laboratory equipment to make observations and to obtain data;
- Learn proper handling of living and preserved specimens;
- Develop an in-depth understanding of the fundamentals of biology through a combination of lectures and laboratories.

(BIOG-Fall 2022)

General Education Courses

When a course is not specified, refer to the list of approved General Education courses.

Communication

Course #	Title	Credits
ENGL101	Composition I	3
ENGL102	Composition II	3

Mathematics-Science-Technology

Course #	Title	Credits
BIOL109	General Biology I	4
MATH155	Calculus I	4
CHEM110	General Chemistry I	4

Social Science

Course #	Title	Credits
	General Education Social Science Course (3 credits)	3

Humanities

Course #	Title	Credits
	General Education Humanities Course (3 credits)	3
	Choose: ARTS103, ARTS108, ARTS109, ARTS115, DANC170, MUSC100 or THEA110 (3 credits)	3

General Education Elective

Course #	Title	Credits
	General Education Course (3 credits)	3

Program Requirements

Course #	Title	Credits
BIOL110	General Biology II	4
CHEM111	General Chemistry II	4
CHEM210	Organic Chemistry I	4

Program Electives - Choose 18 credits from the following:

Course #	Title	Credits
PHIL/BIOL104	Bioethics: Realities of the New Millennium	3
BIOL205	Genetics	4
BIOL250	Microbiology	4
CHEM211	Organic Chemistry II	4
ENVL205	Ecology	4
MATH152	Linear Algebra	4
MATH156	Calculus II	4
MATH255	Calculus III	4
PHIL101	Introduction to Logic	3
	PHYS125 or PHYS225 (See advisor for best option. PHYS125 offered in fall only)	4
	PHYS126 or PHYS226 (See advisor for best option. Offered in spring only)	4

Technological Competency: 0-4 Credits

(Is fulfilled with CISM125 or CISM132, which may be taken as a General Education Elective, testing or reviewed departmental portfolio.)

Total Credits	60
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Recommended Sequence of Courses

First Semester

Course #	Title	Credits
BIOL109	General Biology I	4
CHEM110	General Chemistry I	4
ENGL101	Composition I	3
MATH155	Calculus I	4

Second Semester

Course #	Title	Credits
BIOL110	General Biology II	4
CHEM111	General Chemistry II	4
ENGL102	Composition II	3
	Program Elective Course (4 credits)	4

Third Semester

Course #	Title	Credits
CHEM210	Organic Chemistry I	4
	General Education Humanities Course (3 credits)	3
	General Education Course (3 credits)	3
	Program Elective Course (3 credits)	3
	Program Elective Course (4 credits)	4

Fourth Semester

Course #	Title	Credits
	Choose: ARTS103, ARTS108, ARTS109, ARTS115, DANC170, MUSC100 or THEA110 (3 credits)	3
	General Education Social Science Course (3 credits)	3
	Program Elective Course (3 credits)	3
	Program Elective Course (4 credits)	4

Biomedical Science, Associate in Science

This degree is designed for students who wish to transfer to an accredited college or university to complete a Bachelor of Science degree, and eventually a master's and/or a doctorate degree, in fields such as human medicine, veterinary medicine, chiropractic, physician assistant, dentistry, physical therapy, occupational therapy, podiatry, optometry, medical technology, or pharmacy. It is strongly recommended that students entering the program have at least one year of high school biology, chemistry, and mathematics at an advanced level.

Students should consult their advisor and their desired transfer institution regarding which program electives would best suit their career interests.

For additional information, please contact department chair, Kenneth Cabarle at (609)343-5128 or kcabarle@atlanticcape.edu.

Upon completion of this program students will be able to:

- Utilize critical thinking and reasoning to comprehend, apply and competently communicate knowledge regarding the world around them;
- Apply ethical reasoning to evaluate ethical dilemmas and make sound decisions;
- Demonstrate correct use of laboratory equipment and supplies in a safe, skilled manner;
- Correctly explain and apply the scientific method, and competently analyze data;
- Utilize information technology to obtain scientific literature that they can both interpret and analyze;
- Utilize appropriate language to explain the fundamental chemical and biological processes of living organisms;
- Correctly interpret, utilize and apply mathematical principles.

(BIOM-Fall 2022)

General Education Courses

When a course is not specified, refer to the list of approved General Education courses.

Communication

Course #	Title	Credits
ENGL101	Composition I	3
ENGL102	Composition II	3
COMM120	Public Speaking	3

Mathematics-Science-Technology

Course #	Title	Credits
BIOL109	General Biology I	4
BIOL220	Human Anatomy and Physiology I	4
CHEM110	General Chemistry I	4

Social Science

Course #	Title	Credits
PSYC101	General Psychology	3

Humanities

Course #	Title	Credits
PHIL110	Introduction to Ethics	3
	Choose: ARTS103, ARTS108, ARTS109, ARTS115, DANC170, HIST101, HIST102, HIST103, HIST104, MUSC100 or THEA110 (3 credits)	3

Program Requirements

Course #	Title	Credits
BIOL110	General Biology II	4
BIOL250	Microbiology	4
CHEM111	General Chemistry II	4
	Choose: MATH155 or MATH220 (4 credits)	4

Program Electives

Choose a minimum of 14 credits from the following:

Course #	Title	Credits
PHIL/BIOL104	Bioethics: Realities of the New Millennium	3
BIOL221	Human Anatomy and Physiology II	4
BIOL205	Genetics	4
CHEM210	Organic Chemistry I	4
CHEM211	Organic Chemistry II	4
CISM135	Computer Programming-C++	4
MATH155	Calculus I	4
MATH156	Calculus II	4
MATH220	Statistical Methods	4
PHIL101	Introduction to Logic	3
	PHYS125 or PHYS225 (See advisor for best option. PHYS125 offered in fall only)	4
	PHYS126 or PHYS226 (See advisor for best option. Offered in spring only)	4

Technological Competency: 0-4 Credits

(Is fulfilled with CISM125, CISM132, testing or reviewed departmental portfolio.)

Total Credits	60
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Recommended Sequence of Courses

First Semester

Course #	Title	Credits
BIOL109	General Biology I	4
CHEM110	General Chemistry I	4
ENGL101	Composition I	3
	Choose: MATH155 or MATH220 (4 credits)	4

Second Semester

Course #	Title	Credits
BIOL110	General Biology II	4
CHEM111	General Chemistry II	4
ENGL102	Composition II	3
	Program Elective Course (3 credits)	3
	Choose: ARTS103, ARTS108, ARTS109, ARTS115, DANC170, HIST101, HIST102, HIST103, HIST104, MUSC100 or THEA110 (3 credits)	3

Third Semester

Course #	Title	Credits
BIOL220	Human Anatomy and Physiology I	4
PHIL110	Introduction to Ethics	3
	Program Elective Course (3 credits)	3
	Program Elective Course (4 credits)	4

Fourth Semester

Course #	Title	Credits
BIOL250	Microbiology	4
COMM120	Public Speaking	3
PSYC101	General Psychology	3
	Program Elective Course (4 credits)	4

Biology Courses

BIOL/ANTH101 : Biological Anthropology: Human Origins and Evolution

Introduction to biological anthropology. Study of human genetics, biochemistry, anatomy, physiology, and primatology including the primate fossil record. Demonstrates how biological aspects of humans have evolved and how biological evolution is intertwined with human culture, human behavior and the environment. Only anthropology course that fulfills laboratory science requirements. Meets General Education requirement for Science.

Credits 4

Lecture Hours 3

Lab/Clinical/Field Study Hours 3

Prerequisites

ENGL080 and MATH073 or MATH099 with grades of C or better, or Placement into ENGL101 and MATH074 or College level Math.

BIOL/PHIL104 : Bioethics: Realities of the New Millennium

Deals with the controversial biological issues of today: animal welfare, bioengineering, death and dying issues concerning the unborn to the aged, etc. Focus is on student opinions and in-depth discussions. Of particular interest to students in Allied Health. May be used as a liberal arts or free elective.

Credits 3

Lecture Hours 3

Lab/Clinical/Field Study Hours 0

BIOL103 : Biology of Our World

A survey of biological principles including cell theory, diversity of living organisms, bioenergetics, genetics and evolution. Continuity is maintained via an ecological emphasis and the application of biology to everyday life. This course includes animal dissection. Will not serve as a prerequisite for upper-level biology offerings. Meets General Education requirement for Science.

Credits 4

Lecture Hours 3

Lab/Clinical/Field Study Hours 3

Prerequisites

ENGL080 and MATH073 or MATH099 with a grade of C or better or Placement test score or SAT score. Recommended for non-science majors requiring one semester of biological science.

BIOL109 : General Biology I

Introduction of biological principles of chemical and cellular organization, metabolism and energy processing, cellular reproduction, genetics, evolution and microbes. Recommended for science majors or students requiring two semesters of biological science. General Biology I (BIOL109) and Biology of Our World (BIOL103) are not equivalent or sequential courses. Students may use only one of these introductory courses to meet the lab science requirement. Meets General Education requirement for Science.

Credits 4

Lecture Hours 3

Lab/Clinical/Field Study Hours 3

Prerequisites

ENGL080 and MATH074 or MATH099 with grade of C or better or Placement test score or SAT score.

BIOL110 : General Biology II

Aspects of animal and plant life, anatomy, physiology, development, control mechanisms, behavior, evolution and distribution. Investigative laboratory experience with living and preserved material. This course includes animal and plant dissection. Meets General Education requirement for Science.

Credits 4

Lecture Hours 3

Lab/Clinical/Field Study Hours 3

Prerequisites

BIOL109 with a grade of C or better. Recommended for students seeking to complete their two-semester General Biology sequence with an emphasis on the animal and plant kingdoms.

BIOL118 : The Human Body

Study of the structure and function of the organ systems stressing their role in keeping the body alive. This course cannot be used as a prerequisite for any biology course. This course may include animal dissection. Meets General Education requirement for Science.

Credits 4

Lecture Hours 3

Lab/Clinical/Field Study Hours 3

Prerequisites

ENGL080 with a grade of C or better or Placement into ENGL101 and MATH073 or MATH099 with a grade of C or better or Placement test score or SAT score.

BIOL205 : Genetics

Genetics is designed to give the student an overview of the discipline of genetics, the study of the transmission of biological properties from parents to the offspring. This course introduces the principles of transmission, molecular, population, and quantitative genetics. The laboratory activities will teach students basic skills in classic and modern genetics.

Credits 4

Lecture Hours 3

Lab/Clinical/Field Study Hours 3

Prerequisites

BIOL109 and CHEM110 with a grade of C or better, or permission of instructor.

Semester Offered

Fall

BIOL220 : Human Anatomy and Physiology I

Study of basic cell biology, integumentary, muscular, skeletal, nervous and endocrine systems. This course includes animal dissection. Meets General Education requirement for Science.

Credits 4

Lecture Hours 3

Lab/Clinical/Field Study Hours 3

Prerequisites

BIOL109 or CHEM100 or CHEM110 with a C or better, or a score of 70% on the chemistry or biology placement exam; ENGL080 with a grade of C or better or Placement into ENGL101; and MATH074 or MATH099 with a grade of C or better or Placement Test score or SAT score. Atlantic Cape Nursing students should take CHEM100. Students planning to transfer should seek advice from their transfer institution and/or an academic advisor on whether to take BIOL109, CHEM100, or CHEM110 course.

BIOL221 : Human Anatomy and Physiology II

Study of circulatory, respiratory, digestive, excretory and reproductive systems. This course includes animal dissection. Meets General Education requirement for Science.

Credits 4

Lecture Hours 3

Lab/Clinical/Field Study Hours 3

Prerequisites

BIOL220 (formerly BIOL120) with a C or better.

BIOL250 : Microbiology

Introductory survey of microorganisms including bacteria, yeast, molds, viruses, rickettsiae, protozoa and algae. Emphasis on bacteria in their various ecological niches. Attention given to the medical, sanitary and industrial aspects of microbiology.

Credits 4

Lecture Hours 3

Lab/Clinical/Field Study Hours 3

Prerequisites

Two college-level lab science courses with a grade of C or better, or permission of instructor.