Chemistry

Chemistry Degrees and Certificates

Chemistry, Associate in Science

This degree can lead to a baccalaureate degree in chemistry at accredited colleges or universities. With the addition of biology courses, and some modifications, it is also appropriate for those interested in pharmacy, medicine, dentistry, environmental science, and chemical engineering. Electives should be selected based on the student's interest, the requirements of the transfer institution, or technical-level vocation opportunities.

For more information, contact faculty advisor, Dr. Laurie Lemons, at (609) 343-5019 or llemons@atlanticcape.edu, or department chair, John Stratton, at (609) 343-4981 or stratton@atlanticcape.edu.

Upon completion of this program students will be able to:

- Use chemical terminology, apply chemical principles and understand the relationship between chemical structure and behavior;
- Apply both conceptual reasoning and quantitative skills to solve problems;
- Prepare for and safely conduct an experiment, properly record and analyze data, and draw reasonable conclusions by integrating concepts learned in lecture;
- Effectively communicate scientific information and experimental results in written and oral formats;
- Use equipment, instrumentation, or other appropriate technology for data acquisition and analysis.

(*CHMI-Fall* 2023)

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
CHEM110	General Chemistry I	4
MATH155	Calculus I	4
MATH156	Calculus II	4

Social Science

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

Humanities

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

General Education Elective

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

Program Requirements

Note: PHYS225 should be taken for transfer into a baccalaureate chemistry program

CHEM211 is offered in spring only

Course #	Title	Credits
CHEM111	General Chemistry II	4
CHEM210	Organic Chemistry I	4
CHEM211	Organic Chemistry II	4
	PHYS125 or PHYS225 (See advisor for best option. PHYS125 offered in fall only)	4

Program Electives

Choose 11 credits from the following:

Course #	Title	Credits
BIOL109	General Biology I	4
BIOL110	General Biology II	4
CISM135	Computer Programming-C++	4
MATH152	Linear Algebra	4
MATH255	Calculus III	4
PHIL101	Introduction to Logic	3
PHIL/BIOL104	Bioethics: Realities of the New Millennium	3
	PHYS126 or PHYS226 (See advisor for best option. Offered in spring only)	4

Free Elective

Free Elective: Any college-level course in the curriculum. (Exceptions: DEVA110, DEVS111, DEVA155, ENGL070, ENGL080, ENGL099, MATH073, MATH074, MATH099, ESLN060, ESLN062, ESLN070, ESLN071, ESLN072, ESLN074, ESLN075, ESLN080, ESLN090, ESLN091, ESLN092, ESLN093, ESLN094, ESLN095, ESLN096, ESLN099, ESLN100, or any course designated remedial or developmental)

Free Elective may be used to satisfy the Technological Competency requirement (CISM125 or CISM32).

Course #	Title	Credits
	Free Elective(s): Choose any college-level course(s) (3 Credits)	3

Technological Competency: 0-4 Credits

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

	Total Credits	60

Recommended Sequence of Courses

First Semester

Course #	Title	Credits
CHEM110	General Chemistry I	4
ENGL101	Composition I	3
MATH155	Calculus I	4
	Program Elective Course (4 credits)	4

Second Semester

Course #	Title	Credits
CHEM111	General Chemistry II	4
ENGL102	Composition II	3
MATH156	Calculus II	4
	Program Elective Course (3 credits)	3
	General Education Social Science Course (3 credits)	3

Third Semester

Course #	Title	Credits
CHEM210	Organic Chemistry I	4
PHYS125	College Physics I	4
	General Education Humanities Course (3 credits)	3
	Choose: ARTS103, ARTS108, ARTS109, ARTS115, DANC170, MUSC100 or THEA110 (3 credits)	3

Fourth Semester

(PHYS126 or PHYS226 suggested for Program Elective Course)

Course #	Title	Credits
CHEM211	Organic Chemistry II	4
	Program Elective Course (4 credits)	4
	General Education Course (3 credits)	3
	Free Elective(s): Choose any college-level course(s) (3 Credits)	3

Chemistry Courses

CHEM100 : Introduction to College Chemistry

Study of the basic principles of chemistry for the student with little or no chemistry background. Topics include: mathematics review, significant figures, scientific notation, scientific method, the metric system, problem solving, dimensional analysis, classification of matter, chemical bonding, atomic theory, stoichiometry, gas laws, solution chemistry, acid-base reactions, and equilibrium reactions. Topics are introduced in the lecture and reinforced in the laboratory. This course is appropriate for students in health sciences, pre-science, or non-science curricula. Will not serve as a prerequisite for upper-level chemistry offerings. Meets General Education requirement for Science.
Credits 4
Lecture Hours 3
Lab/Clinical/Field Study Hours 3
Prerequisites
ENGL080 and MATH073 or MATH074 or MATH099 with a grade of C or better or Placement test score or SAT score. This is a one-semester course for non-science majors.

CHEM110 : General Chemistry I

General theories and principles of chemistry are introduced and emphasized in the lecture and reinforced in the laboratory. Topics include mathematic review, significant figures, scientific notation, scientific method, the metric system, problem solving, dimensional analysis, nomenclature, chemical equations, stoichiometry, heats of reaction, calorimetry, Hess's Laws, gas laws, atomic and molecular theory, structure and chemical bonding. Meets General Education requirement for Science.
Credits 4
Lecture Hours 3
Lab/Clinical/Field Study Hours 3
Prerequisites
ENGL080 and MATH074 or MATH099 with a grade of C or better or Placement Test score or SAT score. This is a two-semester sequence (with CHEM111) recommended for science majors who intend to transfer to four-year institutions.

CHEM111 : General Chemistry II

Continuation of CHEM110-General Chemistry I. Topics include solution chemistry, molecular weight determination, concentration, kinetics, thermodynamics, equilibrium systems (Ka, Kb, Ksp), qualitative and instrumental analysis, acid-base chemistry, redox reactions, electrochemistry, nuclear, organic, polymer and biochemistry.
Credits 4
Lecture Hours 3
Lab/Clinical/Field Study Hours 3
Prerequisites
CHEM110 with a C or better. This is a two-semester sequence (with CHEM110) recommended for science majors who intend to transfer to four-year institutions.

CHEM210 : Organic Chemistry I

Modern theories of molecular structure, reaction mechanisms, and synthesis of organic compounds are introduced. Topics include classification and nomenclature of organic compounds, stereochemistry, hydrocarbons, halogenated hydrocarbons, and spectroscopy. Laboratory sessions will emphasize techniques for the synthesis, purification, and identification of organic compounds.
Credits 4
Lecture Hours 3
Lab/Clinical/Field Study Hours 3
Prerequisites
CHEM111 with a grade of C or better

CHEM211 : Organic Chemistry II

Continuation of CHEM210-Organic Chemistry I. Topics include carbonyl chemistry, aromatic hydrocarbons, phenols, amines, proteins and carbohydrates. Laboratory will emphasize synthesis, purification, and spectroscopic identification of organic compounds.

Credits 4
Lecture Hours 3
Lab/Clinical/Field Study Hours 3
Prerequisites
CHEM210 with a grade of C or better
Semester Offered
Spring