

Physics, Associate in Science

This degree is focused on providing students with the resources to pursue a baccalaureate degree in physics and establish a strong foundation for physics careers in academia or industry. This foundation will comprise the first two years of a baccalaureate degree in Physics. As physics is the fundamental basis for all other sciences, the program is versatile in that it may be applied to many science career paths (e.g., data science, cybersecurity, national security, software engineering, game engines, coding, and modelling). The Physics program further demonstrates its versatility by allowing the student to pursue coursework in other scientific area such as Biology, Chemistry, and Computer Science. The degree will be useful to students who are motivated towards an academic or industry career in physics as well as students who are sure of their penchant for science but unsure of precisely which field of science to commit to as a profession.

For additional program information, contact faculty advisor, Dr. Francis Toriello, at (609) 343-5682 or ftoriell@atlanticcape.edu, or department chair, Kenneth Cabarle at (609)343-5128 or kcabarle@atlanticcape.edu.

Upon completion of this program students will be able to:

- Use physics terminology, apply fundamental physical principles and the laws of physics to understand the relationship between matter and energy of physical systems and physical phenomenon exhibited by said physical systems;
- Apply both conceptual reasoning and quantitative skills to analyze and solve physics problems systematically and logically;
- Prepare for and safely conduct an experiment, properly record and analyze data, and apply theoretical strategies to the analysis of data and discuss the causes of error with respect to both theory and experiment;
- Use equipment, instrumentation, or other appropriate technology for data acquisition and analysis;
- Build and execute predicative mathematical models of physical systems;
- Effectively communicate scientific information and experimental results in written formats.

(PHYS-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
MATH155	Calculus I	4
MATH156	Calculus II	4
PHYS225	General Physics I	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
	Choose: PHIL101, PHIL102, PHIL105, PHIL110 or PHIL111 (3 credits)	3

Humanities or Social Science

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

Program Requirements

Course #	Title	Credits
MATH255	Calculus III	4
MATH256	Differential Equations	4
PHYS226	General Physics II	4
PHYS228	General Physics III	4
PHYS230	Introduction to Modern Physics	4

Program Electives

Choose a minimum of 10 credits from the following:

Course #	Title	Credits
PHYS102	Fundamentals of Astronomy	4
CISM125	Introduction to Computers	3
CISM135	Computer Programming-C++	4
CISM148	Problem Solving Using Scripting	4
CISM159	Intermediate Programming-C++	4
MATH152	Linear Algebra	4
MATH220	Statistical Methods	4
ENGR125	Introduction to Electronics	4
ENGR201	Statics	3
ENGR204	Dynamics	3
CHEM110	General Chemistry I	4
CHEM111	General Chemistry II	4
BIOL109	General Biology I	4
BIOL110	General Biology II	4

Technological Competency: 0-4 Credits

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

Total Credits	60
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Recommended Sequence of Courses

First Semester

Course #	Title	Credits
ENGL101	Composition I	3
MATH155	Calculus I	4
PHYS225	General Physics I	4
	Program Elective Course (4 credits)	4

Second Semester

Course #	Title	Credits
ENGL102	Composition II	3
MATH156	Calculus II	4
PHYS226	General Physics II	4
	Program Elective Course (3 credits)	3
	General Education Social Science Course (3 credits)	3

Third Semester

Course #	Title	Credits
MATH255	Calculus III	4
PHYS228	General Physics III	4
	General Education Social Science or Humanities Course (3 credits)	3
	Choose: ARTS103, ARTS108, ARTS109, ARTS115, DANC170, MUSC100 or THEA110 (3 credits)	3

Fourth Semester

Course #	Title	Credits
MATH256	Differential Equations	4
PHYS230	Introduction to Modern Physics	4
	Program Elective Course (3 credits)	3
	Choose: PHIL101, PHIL102, PHIL105, PHIL110 or PHIL111 (3 credits)	3