

Science, AS, and Options

ABOUT THE PROGRAM

The AS in Science provides the math and science foundation necessary to pursue later specialization, graduate study, and professional schools. All students in the AS in Science must choose one of four options: Biology, Chemistry, Earth Systems and Environmental Science, or Physics. Each option prepares students for transfer to a complementary four-year degree program. Students in the Biology, Chemistry, or Earth Systems and Environmental Science options transfer to four-year science programs (biochemistry, biology, chemistry, earth and environmental science, etc.), teacher education programs, pharmacy schools, or engineering programs (biomedical, chemical, environmental). Students in the Physics option usually transfer to colleges offering bachelor's degrees in engineering (civil, electrical, mechanical, etc.) or in the physical sciences. Enrichment programs are offered to encourage students to continue their education beyond the bachelor degree by attending graduate or other professional programs (e.g., medical school, physical assistant programs, physical therapy programs).

Learning Outcomes

Upon successful completion of the Science program requirements, students will be able to:

1. Identify and apply the fundamental concepts and methods of a life or physical science.
2. Apply the scientific method to explore natural phenomena, including hypothesis development, observation, experimentation, measurement, data analysis, and data presentation.
3. Interpret and draw appropriate inferences from quantitative representation such as formulas, graphs, or tables and represent quantitative problems expressed in natural language in a mathematical format.
4. Use algebraic, numerical, graphical, or statistical methods to solve mathematical problems and to apply mathematical methods in a scientific field.

SCIENCE

Associate in Science Degree | Transfer Degree | Department of Biological Sciences

Program Description

Science: Biology Option

A student interested in the AS degree in Science has to choose one of four options that includes Biology. The option prepares students for transfer to a complementary four-year degree program. Students in the Biology option transfer to four-year science programs (biochemistry, biology, chemistry, earth and environmental science, etc.), teacher education programs, pharmacy schools, or engineering programs (biomedical, chemical, environmental). Enrichment programs are offered to encourage students to continue their education beyond the bachelor degree by attending graduate or other professional programs (e.g., medical school, physician assistant programs, physical therapy programs).

Learning Outcomes

Upon successful completion of the Science program requirements, students will be able to:

1. Identify and apply the fundamental concepts and methods of a life or physical science.
2. Apply the scientific method to explore natural phenomena, including hypothesis development, observation, experimentation, measurement, data analysis, and data presentation.
3. Interpret and draw appropriate inferences from quantitative representation such as formulas, graphs, or tables and represent quantitative problems expressed in natural language in a mathematical format.
4. Use algebraic, numerical, graphical, or statistical methods to solve mathematical problems and to apply mathematical methods in a scientific field.

Upon successful completion of the Biology option requirements, students will be able to:

1. Exhibit basic mastery of biological content such as the primary principles and processes underlying natural systems, such as atoms and molecules and cells and organisms.
2. Demonstrate basic scientific skills, evaluate

information scientifically, and distinguish between the scientific method and other human endeavors.

3. Demonstrate an understanding of theoretical principles across a broad range of sub-disciplines in the biological sciences and evaluate the quality/credibility of information from various kinds of sources (academic, journalistic, popular media).
4. Apply the principles of math as they pertain to the study of biological sciences.

SCIENCE CURRICULUM (PATHWAYS)

60 Credits required for AS Degree

Curriculum Coordinator: Dr. Charles Maliti

Required Core

- A. English Composition (6 Credits)
- B. Mathematical and Quantitative Reasoning
 - MTH 28^{1,2} College Algebra and Elementary Trigonometry *OR* MTH 28.5 College Algebra and Elementary Trigonometry (Corequisite) (3 Credits)
- C. Life and Physical Science
 - CHM 11¹ General College Chemistry I (4 Credits)

Flexible Core

- A. World Cultures and Global Issues (3 Credits)
- B. U.S. Experience in its Diversity (3 Credits)
- C. Creative Expression (3 Credits)
- D. Individual and Society (3 Credits)
- E. Scientific World
 - CHM 12¹ General College Chemistry II (4 Credits)
 - MTH 30^{1,2} Pre-Calculus Mathematics (4 Credits)

SUBTOTAL 33

Major Requirements

- MTH 31³ Analytic Geometry and Calculus I (4 Credits)
- MTH 32 Analytic Geometry and Calculus II (4 Credits)
- Free Electives² (0 - 7 Credits)
- FYS 11³ First Year Seminar (1 credit)

Biology Option Requirements

- BIO 120 Biology I: Molecules, Cells, and Genes (4 Credits)
- BIO 121 Biology II: Organisms, Biodiversity, and Systems (4 Credits)
- CHM 31 Organic Chemistry I (5 Credits)
- CHM 32 Organic Chemistry II (5 Credits)

SUBTOTAL 27

¹ This program has obtained a waiver to require STEM variant courses in Required Core Area B and Area C and Flexible Core Area E. If students transferring into this program complete different courses in these areas, they will be certified as having completed the Common Core requirements, but it may not be possible for them to finish their degree within the regular number (60) of credits.

² Students who place out of MTH 28 and/or MTH 30 will take elective course(s) to complete 60 total degree credits. In such cases, major/option courses can be used to satisfy appropriate core requirements.

³ Students transferring into the program with 24 or more degree or equated credits will be exempt from FYS 11, and can take 1 credit of elective to satisfy this requirement.

The Biology Option fully articulates with Lehman's B.S. in Physical Anthropology and B.A. in Biology. The Biology Option also articulates with SUNY Empire State College. Copies of these agreements may be found on the BCC Transfer Planning website.

