SCIENCE

Associate in Science Degree | Transfer Degree | Department of Engineering, Physics and Technology

Program Description

Science: Physics Option

A student interested in the AS in Science has to 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 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, physician assistant programs, physical therapy programs). Please note that the option articulates with SUNY Empire State College. Please visit the Transfer Planning web site for more details.

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 Physics option requirements, students will be able to:

1. Students will demonstrate a conceptual understanding of Physics principles, including those in Newtonian Mechanics, Electricity, Fluid Dynamics, and Magnetism.
2. Students will show mastery of a variety of experimental techniques, data analysis, scientific writing, and presentation skills.
3. Students will demonstrate the ability to use analytical and / or computational methods to solve Physics problems.

SCIENCE CURRICULUM (PATHWAYS)

60 Credits required for AS Degree

Curriculum Coordinator: Dr. Joseph Malinsky

Required Core

A. English Composition (6 Credits)

B. Mathematical and Quantitative Reasoning

- MTH 30[1] Pre-Calculus Mathematics *OR*
  MTH 31 Analytic Geometry and Calculus I (4 Credits)

C. Life and Physical Science

- CHM 11[1] General Chemistry I (4 Credits)

SUBTOTAL 14

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 12[1] General Chemistry II (4 Credits)

Restricted Elective* Select one course from Area A-E. (3 Credits)

SUBTOTAL 19

Major Requirements

- Free Electives (0 - 5 Credits)
- MTH 31** Analytic Geometry and Calculus I (0 - 4 Credits)
- MTH 32 Analytical Geometry and Calculus II (5 Credits)

Physics Option Requirements

- MTH 33 Analytic Geometry and Calculus III (5 Credits)
- PHY 31 General Physics I (4 Credits)
- PHY 32 General Physics II (4 Credits)
- PHY 33 General Physics III (4 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 bse 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.

* Restricted Elective: must select one course from Flexible Core A-E. No more than two courses in any discipline or interdisciplinary field.

** For students that take MTH 30 to fulfill the Required Core.