



# PHYSICAL SCIENCE & ENGINEERING

## *A.S. Degrees*

General Education Requirements:  
A student may complete the  
Gavilan College AA/AS general  
education, the CSU-GE Breadth,  
or the IGETC pattern. See a  
counselor for details.

The A.S. degree in Engineering and Physical Science has two options.

The **Physical Science and Engineering** option is for students interested in pursuing degrees in astronomy, chemistry, geology or geophysics, general science, meteorology, oceanography, physics, etc.

The **Physical Science and Engineering: General Engineering** option is for students interested in pursuing a degree in any field of engineering (Aeronautical, Chemical, Civil, Computer, Electrical, Industrial, Materials, Mechanical, etc.). The General Engineering option follows a pattern of lower-division courses established by the California Engineering Liaison Council (ELC), an organization composed of representatives from two and four-year colleges. Students who complete the General Engineering option will be able to transfer to the UC or CSU campus of their choice and complete their degree program in the same amount of time as students who start at the four-year schools.

During their first semester at Gavilan, Physical Science and Engineering majors are encouraged to consult the catalogs of the four-year schools to which they plan to transfer. Specific requirements for four-year engineering degrees vary by university.

Contact:  
(408) 848-4701  
las@gavilan.edu

## Physical Science and Engineering *A.S. Degree*

CHEM 1A/B	General Chemistry	5-5	units
MATH 1A/B	Single-Variable Calculus & Analytic Geometry	4-4	units
MATH 1C	Multivariable Calculus	.4	units
MATH 2*	Linear Algebra	.3	units
MATH 2C	Differential Equations	.3	units
ENGR 5	C++ Scientific Programming	.3	units
PHYS 4ABC	Physics for Scientists and Engineers	4-4-4	units
		43	UNITS

Plus completion of general education requirements

\* There are times when a course listed as a requirement for a major or certificate cannot be offered in a reasonable timeframe. Course substitutions and waivers will be considered by the department. Please contact the department chairperson. This information is available from the Office of Instruction - (408) 848-4761

Program Learning Outcomes: After completing this degree a student will be able to:

demonstrate appropriate integration of math and science to solve real-world problems.

demonstrate appropriate design and execution of experiments, as well as analysis and interpretation of the data.

demonstrate an ability to communicate clearly using written, oral, electronic, and graphical means.

See Gavilan general education requirements on page 47. Students completing the core courses will have satisfied requirements for Area B (Physical Universe and Its Life Forms), 1. Physical Science and 3. Mathematics. Students completing the General Engineering Option will have satisfied requirements for Area A (Communication in the English Language), 2. Written Communication.

## Physical Science and Engineering: General Engineering *A.S. Degree*

CHEM 1A/B	General Chemistry	5-5	units
ENGL 1A	Composition	.3	units
ENGR 1	Engineering Graphics	.3	units
ENGR 2	Statics	.3	units
ENGR 3	Electrical Circuits, Devices and Systems	.3	units
ENGR 4	Properties of Materials	.3	units
ENGR 5	C++ Scientific Programming	.3	units
MATH 1A/B	Single-Variable Calculus & Analytic Geometry	4-4	units
MATH 1C	Multivariable Calculus	.4	units
MATH 2*	Linear Algebra	.3	units
MATH 2C	Differential Equations	.3	units
PHYS 4ABC	Physics for Scientists and Engineers	4-4-4	units
		58	UNITS

Plus completion of general education requirements

\* There are times when a course listed as a requirement for a major or certificate cannot be offered in a reasonable timeframe. Course substitutions and waivers will be considered by the department. Please contact the department chairperson. This information is available from the Office of Instruction - (408) 848-4761

Program Learning Outcomes: After completing this degree a student will be able to:

identify, compare and contrast engineering problems and demonstrate integration of math and science to solve them.

demonstrate appropriate design and execution of experiments, as well as analyze and interpret of the data.

demonstrate the engineering design process by designing a system, component or process to meet a desired need.

demonstrate an ability to communicate clearly using written, oral, electronic and graphical means.

See Gavilan general education requirements on page 47. Students completing the core courses will have satisfied requirements for Area B (Physical Universe and Its Life Forms), 1. Physical Science and 3. Mathematics. Students completing the General Engineering Option will have satisfied requirements for Area A (Communication in the English Language), 2. Written Communication.