ENGINEERING

A.S. DEGREE

Description

The required core curriculum for this degree follows closely the Intersegmental Model Curricula (ISMC) developed by the Engineering Liaison Council (ELC) between community colleges and four-year public colleges and universities.

Students completing this degree will have learned to identify various engineering problems and integrate math and science to solve them, have proficiency in the design, execution, analysis, and interpretation of experiments, demonstrate familiarity with the engineering design process, and will have demonstrated an ability to communicate effectively using written, oral, electronic, and graphical means. This degree will prepare students to transfer to four-year colleges or universities to pursue degrees in any of the engineering disciplines (aeronautical, chemical, civil, computer, electrical, industrial, materials, mechanical, etc.).

For detailed requirements for individual four-year institutions and specific engineering majors, students should contact the transfer institution and/or meet with a counselor for specific transfer course requirements in their major.

Program Learning Outcomes

Upon successful completion of this program, students will be able to:

1. identify, compare and contrast engineering problems and demonstrate integration of math and science to solve them.
2. demonstrate appropriate design and execution of experiments, as well as analyze and interpret of the data.
3. demonstrate the engineering design process by designing a system, component or process to meet a desired need.
4. demonstrate an ability to communicate clearly using written, oral, electronic and graphical means.
5. work effectively in a team, exercise initiative and function in a leadership role.

Program Requirements:

Core Major Courses		**Units:** (22 Required)
ENGR10A	Introduction to Engineering A	2
MATH1A	Single-Variable Calculus and Analytic Geometry	4
MATH1B	Single-Variable Calculus and Analytic Geometry	4
MATH1C	Multivariable Calculus	4
PHYS4A	Physics for Scientists and Engineers: Mechanics	4
PHYS4B	Physics for Scientists and Engineers: Electricity and Magnetism	4

Choose one		**Units:** (3 Required)
ENGR5	Engineering Programming and Problem Solving	3
CSIS45	C++ Programming I	3

Choose one.		**Units:** (3 Required)
ENGR1	Graphical Communication and Design	3
ENGR2	Statics	3

ENGR3	Electric Circuit Analysis	4
ENGR4	Properties Of Materials	3

Choose ONE track **Units:** (10 Required)

Complete a minimum of 10 units in one track. Tracks and courses should be selected to meet the lower division major requirements at your intended transfer university. See a counselor to determine specific major preparation.

Track 1: Mechanical, Aerospace and Manufacturing

CHEM1A	General Chemistry	5
ENGR5	Engineering Programming and Problem Solving	3
ENGR2	Statics	3
ENGR3	Electric Circuit Analysis	4
PHYS4C	Physics for Scientists and Engineers-Heat/Optics/Modern Physics	4
MATH2	Linear Algebra	3
MATH2C	Differential Equations	3

Units: (0 Required)

Track 2: Electrical

CHEM1A	General Chemistry	5
CSIS45	C++ Programming I	3
CHEM1B	General Chemistry	5
ENGR3	Electric Circuit Analysis	4
PHYS4C	Physics for Scientists and Engineers-Heat/Optics/Modern Physics	4
MATH2	Linear Algebra	3
MATH2C	Differential Equations	3

Units: (0 Required)

Track 3: Civil and Industrial

CHEM1A	General Chemistry	5
ENGR5	Engineering Programming and Problem Solving	3
ENGR2	Statics	3
PHYS4C	Physics for Scientists and Engineers-Heat/Optics/Modern Physics	4
CHEM1B	General Chemistry	5
MATH2	Linear Algebra	3
MATH2C	Differential Equations	3

Units: (0 Required)

Track 4: Computer and Software

CSIS45	C++ Programming I	3
CSIS46	C++ Programming II	3
MATH16	Discrete Mathematics	4
ENGR3	Electric Circuit Analysis	4
PHYS4C	Physics for Scientists and Engineers-Heat/Optics/Modern Physics	4
MATH2	Linear Algebra	3
MATH2C	Differential Equations	3

Units: (0 Required)

Track 5: Chemical, Biomedical and Materials

CHEM1A	General Chemistry	5
ENGR5	Engineering Programming and Problem Solving	3
ENGR2	Statics	3
ENGR3	Electric Circuit Analysis	4
CHEM1B	General Chemistry	5
MATH2	Linear Algebra	3
MATH2C	Differential Equations	3

Additional Major Preparation **Units:** (0 Required)

See a counselor to determine appropriate choices.

General Education Requirements: (26 - 32 Units)* **Units:** (26 Required)

A student may complete the Gavilan College A.A./A.S, general education, the CSU-GE Breadth or the IGETC pattern, plus sufficient electives to Meet a 60 unit total. See a counselor for details
NOTE: A course may be used to satisfy both general eduation and major courses. See "Double Counting Rule".

Total: 64
