

MECHANICAL AND AEROSPACE ENGINEERING ASSOCIATE IN SCIENCE



This degree program is designed to cover the first two years of a four-year program leading to the bachelor's degree in engineering at most four-year colleges and universities. While the bachelor's degree is usually the minimum needed to practice as an engineer, the associate degree will permit an individual to find work in most engineering firms as an engineering aide.

Career Opportunities

Aerospace Engineer¹
 Agricultural Engineer¹
 Architectural Engineer¹
 Biomedical Engineer¹
 CAD/CAM Engineer¹
 Chemical Engineer¹
 Civil Engineer¹
 Civil Engineering Technician
 Computer Engineer¹
 Electrical Engineer¹
 Electrical Engineering Technician
 Environmental Engineer¹
 Geological Engineer¹
 Industrial Engineer¹
 Industrial Engineering Technician
 Manufacturing Engineer¹
 Marine Engineer¹
 Materials Engineer¹
 Mechanical Engineer¹
 Mechanical Engineering Technician
 Mining Engineer¹
 Nuclear Engineer¹
 Petroleum Engineer¹
 Structural Engineer¹
 Systems Engineer¹
 Robotics Engineer¹

¹ Bachelor's degree or higher required.

- Design a rigid structure such as a bridge, determining forces in each part of the structure. Determine the weight and location of the structure's center of gravity.
- Design a dynamic system such as a piston or linkage and compute forces, accelerations, and speeds of all components of the system.
- Select an appropriate material for manufacturing a part or product and determine the appropriate material processing techniques to produce the part. Justify the choice of material on the basis of macroscopic mechanical properties as well as microstructure.
- Determine the DC and steady-state AC voltages and currents everywhere in an electric circuit composed of passive components.
- Model vibrating systems using systems of 2nd order differential equations.

Associate in Science Degree Requirements

Code	Title	Units
CHEM-141	General Chemistry I	5
ENGR-100	Introduction to Engineering and Design	4
ENGR-120	Engineering Computer Applications	3
ENGR-200	Engineering Mechanics-Statics	3
ENGR-210 or ENGR-230	Electric Circuits Basics of Mechatronics	3-4
ENGR-220	Engineering Mechanics-Dynamics	3
MATH-180	Analytic Geometry and Calculus I	5
MATH-280	Analytic Geometry and Calculus II	4
MATH-281	Multivariable Calculus	4
MATH-285	Differential Equations	3
PHYC-201	Mechanics and Waves	5
PHYC-202	Electricity, Magnetism, and Heat	5
Total Units		47-48

Plus General Education Requirements (<https://catalog.gcccd.edu/cuyamaca/degree-requirements-transfer-information/>)

Program Learning Outcomes

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

- Visualize 3D objects and draw them in 2D, both by sketching and through the use of computer-aided drafting software; produce a complete set of drawings sufficient to manufacture a part, including dimensions and tolerances.
- Solve engineering problems through computer modeling, employing an engineering computer language such as Matlab.