

# 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 Engineer<sup>1</sup>  
 Agricultural Engineer<sup>1</sup>  
 Architectural Engineer<sup>1</sup>  
 Biomedical Engineer<sup>1</sup>  
 CAD/CAM Engineer<sup>1</sup>  
 Chemical Engineer<sup>1</sup>  
 Civil Engineer<sup>1</sup>  
 Civil Engineering Technician  
 Computer Engineer<sup>1</sup>  
 Electrical Engineer<sup>1</sup>  
 Electrical Engineering Technician  
 Environmental Engineer<sup>1</sup>  
 Geological Engineer<sup>1</sup>  
 Industrial Engineer<sup>1</sup>  
 Industrial Engineering Technician  
 Manufacturing Engineer<sup>1</sup>  
 Marine Engineer<sup>1</sup>  
 Materials Engineer<sup>1</sup>  
 Mechanical Engineer<sup>1</sup>  
 Mechanical Engineering Technician  
 Mining Engineer<sup>1</sup>  
 Nuclear Engineer<sup>1</sup>  
 Petroleum Engineer<sup>1</sup>  
 Structural Engineer<sup>1</sup>  
 Systems Engineer<sup>1</sup>  
 Robotics Engineer<sup>1</sup>

<sup>1</sup> 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	Electric Circuits	4
ENGR-220	Engineering Mechanics-Dynamics	3
ENGR-260	Engineering Materials	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
<b>Total Units</b>		<b>51</b>

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.