

CAD DESIGNER – MECHANICAL DESIGN AND FABRICATION – LEVEL 2 – ASSOCIATE IN SCIENCE, CERTIFICATE OF ACHIEVEMENT

TOP Code:

0953.00

The Design Technology CAD Designer – Mechanical Design & Fabrication program prepares students to work in mechanical design, industrial design, or manufacturing areas as entry level designers, virtual and rapid prototype builders, or Computer Aided Design (CAD)/Computer Aided Manufacturing (CAM) designers. The program builds on the CAD Technician – Mechanical Design & Fabrication Certificate and leads to the Associate of Science degree, as well as providing a transfer pathway to Baccalaureate programs in Engineering Technology.

The emphasis is on creating original solutions to engineering design technology problems through rigorous design and prototyping processes, using digital rapid prototyping technologies, within a collaborative, project-based environment consistent with advanced manufacturing industry demands of a globalized, sustainable economy.

With a focus on communication skills and creative critical thinking, entry level students develop mechanical design solutions through research, prototyping, analysis and evaluation in an iterative process involving preliminary sketching, 2-dimensional and 3-dimensional CAD drawing and parametric modeling, rapid prototyping using 3-D printing, laser cutting, CNC milling and forming, micro controllers and mechatronics. Advanced students develop complex design solutions integrating multiple technologies and procedures for real world application in competitions, entrepreneurial ventures and startups in an industry incubator model.

The program includes industry credentialing, interdisciplinary collaboration, professional development and work experience opportunities to develop long term transferable skills sets aligned to work force needs evidenced through advisory groups and industry engagement. Graduating students work under the supervision of qualified engineers, industrial designers, product designers or advanced manufacturing technicians at professional offices meeting customer requirements and deadlines by realizing products in a production system.

This program prepares students for entry into high demand fields in advanced manufacturing, industrial design, engineering, and specialized fabrication areas from aerospace to entertainment and medical technology. Students gain associates and professional industry credentials in SolidWorks.

The program builds on the CAD Technician – Mechanical Design & Fabrication certificate – Level 1, and leads to an Associate of Science degree.

Certificate of Achievement is awarded upon completion of all courses with a grade of C or better.

Program Outcomes

- Apply design technology principles and processes to create original, comprehensive solutions to complex engineering design and fabrication problems.
- Utilize appropriate technologies and techniques to produce complex iterative prototypes within a digital workflow to meet industry standards and criteria.
- Communicate effectively using audience appropriate technical, graphical, oral, and written formats in the critical evaluation of processes and products.
- Collaborate effectively in diverse teams to identify, analyze, and solve technical problems of contemporary professional, societal, and global importance.

Requirements for the Certificate of Achievement

Code	Title	Units
DT 008A	INTRODUCTION TO DIGITAL DESIGN AND FABRICATION	3
or ENGR 002	ENGINEERING GRAPHICS	
DT 008B	INTERMEDIATE DIGITAL DESIGN AND FABRICATION	3
DT 008C	ADVANCED SYSTEMS DESIGN AND FABRICATION	4
DT 030	SUSTAINABLE TECHNOLOGIES	3
Choose a Math course below. Higher Math levels accepted		
TECH 107A	TECHNICAL CALCULATIONS	3-5
or MATH 003	COLLEGE ALGEBRA FOR STEM	
Required Electives		
Select at least one course below to meet the 19 unit minimum requirement		3-6
ART 033A	PRODUCT DESIGN APPLICATION I	
ART 036A	JEWELRY/METAL FABRICATION	
DT 017	BUILDING DESIGN & CONSTRUCTION TECHNICAL GRAPHICS	
DT 114	BUILDING INFORMATION MODELING DESIGN (BIM DESIGN)	
DT 118	3-DIMENSIONAL BUILDING DESIGN & REPRESENTATION	
DT 101	FABRICATION LABORATORY	
ELTN 130	INTRODUCTION TO ELECTRONICS	
ENGR 002	ENGINEERING GRAPHICS	
FASH 001A	FASHION SURVEY	
MACH 101	BEGINNING METALWORKING SKILLS	
MIT 101	INTRODUCTION TO ROBOTICS	

WELD 200A INTRODUCTION TO STRUCTURAL WELDING

Total Units

19-24

General Education Requirements for the Associate in Science Degree

- General Information (<https://curriculum.pasadena.edu/academic-programs-leading-degree-certificate/>)
- PCC Local Gen Ed (<https://curriculum.pasadena.edu/academic-programs-leading-degree-certificate/#pcclocaltext>)
- CSU Breadth (<https://curriculum.pasadena.edu/academic-programs-leading-degree-certificate/#csubreadthtext>)
- IGETC (<https://curriculum.pasadena.edu/academic-programs-leading-degree-certificate/#igetctext>)