

# DESIGN TECHNOLOGY

DIVISION: Business and Applied Technology

Prepare for the high pay, high demand, high tech careers of the future. Our various certificate programs will teach you the foundational skills of design technology, with each program leading to a variety of dynamic professional and vocational careers.

- CAD Designer – Architecture/Engineering/Construction – Occupational Skills Certificate (<https://curriculum.pasadena.edu/academic-programs/design-technology/cad-designer-architecture-engineering-construction-occupational-skills-cert/>)
- CAD Modeling and Animation – Architecture/Engineering/Construction – Occupational Skills Certificate (<https://curriculum.pasadena.edu/academic-programs/design-technology/cad-modeling-animation-architecture-engineering-construction-occupational-skills-cert/>)
- CAD Technician – Architecture/Engineering/Construction – Occupational Skills Certificate (<https://curriculum.pasadena.edu/academic-programs/design-technology/cad-technician-architecture-engineering-construction-occupational-skills-cert/>)
- CAD Technician – Mechanical Design and Manufacturing – Occupational Skills Certificate (<https://curriculum.pasadena.edu/academic-programs/design-technology/cad-technician-mechanical-design-manufacturing-occupational-skills-cert/>)
- Design Technology Mechanical + Manufacturing – Associate in Science Degree, Certificate of Achievement (<https://curriculum.pasadena.edu/academic-programs/design-technology/design-technology-mechanical-manufacturing-as-cert-achievement/>)

## Courses

### DT 008A INTRODUCTION TO DIGITAL DESIGN AND FABRICATION 3 unit

*Transfer Credit: CSU; UC*

Introduction to digital design and fabrication through the use of computer-aided design (CAD) and technical graphic production. Design centric projects with emphasis on problem solving, critical thinking, collaboration and communication across multiple industries, software and prototyping technologies with an emphasis on sustainable production methods. Integrated workflow processes including online resources, project management, sustainability and globalization. Career skills and portfolio development. Total of 36 hours lecture and 72 hours laboratory.

**Grade Mode:** *Letter Grade*

### DT 008B INTERMEDIATE DIGITAL DESIGN AND FABRICATION 3 unit

*Transfer Credit: CSU; UC*

**Prerequisite(s):** *DT 008A or ENGR 002 or MIT 101*

Intermediate digital design and fabrication using computer-aided design (CAD) and technical graphic production standards. Design centric projects with emphasis on problem solving, critical thinking, collaboration and communication across multiple industries, software, and rapid prototyping technologies. Integrated workflow processes including online resources, project management, sustainability and globalization. Career skills and portfolio development. Total of 36 hours lecture and 72 hours laboratory.

**Grade Mode:** *Audit, Letter Grade*

### DT 008C ADVANCED SYSTEMS DESIGN AND FABRICATION 4 unit

*Transfer Credit: CSU; UC*

**Prerequisite(s):** *DT 008B*

**Recommended Preparation:** *DT 110*

Design, develop and manufacture of CAD parametric models and prototypes through design centric projects. Emphasis on problem solving, critical thinking, collaboration and communication in an interdisciplinary environment. Advanced material selection, product development, systems analysis and strength and motion analysis for sustainable production practices. Career skills and portfolio development. Total of 36 hours lecture and 108 hours laboratory.

**Grade Mode:** *Audit, Letter Grade*

### DT 017 BUILDING DESIGN & CONSTRUCTION TECHNICAL GRAPHICS 3 unit

*Transfer Credit: CSU; UC*

Use of Computer-Aided Drafting (CAD) in the preparation of two- and three-dimensional architectural building design and construction technical graphics and prototypes. Design centric projects with emphasis on problem solving, critical thinking, collaboration and communication across multiple industries, software and prototyping technologies. Career development includes presentation skills and portfolio development. Total of 36 hours lecture and 72 hours laboratory.

**Grade Mode:** *Letter Grade*

### DT 101 FABRICATION LABORATORY 2 unit

Project design and development in a cross disciplinary environment. Fabrication of projects using rapid prototyping equipment of design projects within a design discipline course. Design production using leading edge computer aided design software, prototyping technologies, principles and practices. Total of 18 hours lecture and 54 hours laboratory.

**Grade Mode:** *Audit, Letter Grade*

### DT 105 EMERGING APPLIED TECHNOLOGIES 2 unit

Critical examination of current issues in applied technology in relation to the future of work. Research into the implications of current and future technological innovation for industry sectors, occupational clusters. Creation of adaptive strategies for long-term success in a globalized, technology-driven economy including entrepreneurship, lifelong learning, and professional development. Emphasis on sustainability, automation and equity. Total of 36 hours lecture and 18 hours laboratory.

**Grade Mode:** *Audit, Letter Grade*

### DT 110 SUSTAINABLE TECHNOLOGIES 3 unit

Introduction to the fundamentals of sustainable design and their technological application for emerging green careers using the LEED (Leadership in Energy and Environmental Design) green rating system framework. Analysis of principles, processes and materials in the built environment within the realms of Architecture, Engineering, Construction, and related design industries. Emphasis on collaboration, communication through design-centric problem solving. Total of 36 hours lecture and 72 hours laboratory.

**Grade Mode:** *Letter Grade*

**DT 114 BUILDING INFORMATION MODELING DESIGN (BIM DESIGN)**

**3 unit**

**Recommended Preparation:** *DT 118*

Introduction to 3-dimensional parametric Building Information Modeling (BIM) using various architectural computer-aided design software including Autodesk Revit. Utilization of software to be applied towards the design, documentation, and analysis of buildings systems. Sustainable practices to be integrated throughout the various projects. Career skills and portfolio development. Total of 36 hours lecture and 54 hours laboratory.

**Grade Mode:** *Audit, Letter Grade*

**DT 118 3-DIMENSIONAL BUILDING DESIGN & REPRESENTATION**

**3 unit**

**Recommended Preparation:** *DT 017*

Three-dimensional computer-aided modeling and prototyping, with a focus on Building Design & Systems Analysis within the Architectural/ Engineering/ Construction industry. Includes 3-D modeling, animation, material application, light studies and rendering. Production of technical architectural graphics and prototypes from 3-D models. Design centric projects with emphasis on problem solving, critical thinking, collaboration and communication across multiple industries, softwares and prototyping technologies. Career development includes presentation skills and portfolio development. Total of 36 hours lecture and 72 hours laboratory.

**Grade Mode:** *Audit, Letter Grade*

**DT 150 READING ENGINEERING DRAWINGS**

**1 unit**

Focus on engineering and manufacturing technical drawings. Emphasizes visualizing and interpreting detailed drawings for mechanical components. Importance placed on generating, modifying, and interpretation of titleblocks, symbols, dimensional and geometric fits and tolerances, view representation, standard fasteners, machine elements, and weldments. Total of 18 hours lecture.

**Grade Mode:** *Audit, Letter Grade*

**DT 220 CAD TECH INTERNSHIP**

**2 unit**

**Prerequisite(s):** *All of the following: DT 140, 150, 008B and maintain enrollment in 7 units or more including internship*

Supervised, practical experience in an industry related professional environment. Pass/no pass grading. Total of 108 hours field practice.

**Grade Mode:** *Audit, Pass/No-Pass*

**DT 230 COMPUTER-AIDED MANUFACTURING**

**3 unit**

**Prerequisite(s):** *MACH 101*

Production of machining operations on CAM software to produce numerical control programming (G-Code) in order to automate numerically controlled machinery (CNC). Topics include CAD, solid modeling, work piece set-up, toolpath generation, G&M Codes, machine set-up, contour, pocket and surface machining. Total of 27 hours lecture and 81 hours laboratory.

**Grade Mode:** *Audit, Letter Grade*

**DT 240 GEOMETRIC DIMENSIONING AND TOLERANCING**

**2 unit**

**Prerequisite(s):** *DT 150 or DT 008A*

Analysis of functions and mating relationships in determining geometric dimensioning and tolerance. Continuation of the design of mechanical components using three-dimensional attributes of the component beyond two-dimensional dimensions. Application of industry standards such as American Society of Mechanical Engineers (ASME) in solving engineering problems. Topics covered include tolerancing, form controls, datums, orientations controls, tolerance of position, concentric, symmetry, runout and profile controls. Total of 18 hours lecture and 54 hours of laboratory.

**Grade Mode:** *Audit, Letter Grade*