



# Manufacturing and Product Development Industry Sector

The Manufacturing and Product Development industry sector is an important part of California's economy, producing a wide range of products, including computers, communications equipment, electronic components, high-tech instruments, apparel, metal products, chemicals, plastics, aircraft, ships, missiles and space products, and search and navigation equipment. Both large and small manufacturers are important participants in the electronics, multimedia, and other emergent regional industrial clusters.

This sector provides a foundation in manufacturing processes and systems for all industrial and technology education students in California. These students are engaged in an instructional program that integrates technical preparation and academics with career awareness, career exploration, and skill preparation in four pathways: Graphic Arts Technology, Integrated Graphics Technology, Machine and Forming Technology, and Welding Technology. Manufacturing and Product Development pathways emphasize real-world, occupationally relevant experiences of significant scope and depth in manufacturing and graphic communication. To prepare students for the vast range of career opportunities in manufacturing and product development, middle schools, high schools, regional occupational centers and programs, apprenticeship programs, community colleges, and four-year colleges and universities provide educational and training programs.

## Manufacturing and Product Development Industry Sector Pathways:

- *Graphic Arts Technology*
- *Integrated Graphics Technology*
- *Machine and Forming Technology*
- *Welding Technology*

### Entry Level Careers

*(with high school diploma)*

Desktop Publishing  
Graphic Art Equipment Operator  
Special Effects Animator  
Web Designer  
Pre-Press Designer  
Machine Operator  
Maintenance Mechanic  
Assembler  
Installation Apprentice  
Bindery Workers  
Welder  
Cutter, Solder, Brazier  
Plastics Assembler  
Foundry Helper  
Furniture Finishers  
Upholsterers  
Painting, Coating, and Decorating Workers

### Technical Level Careers

*(with AA or AS degree or certificate)*

Commercial Photographer  
Production Manager  
Graphic Artist Journeyman  
Advertising Design  
Multimedia Digital Editor  
CNC Programmer  
Machine Technician  
Tooling Journeyman  
Industrial Electrician  
Cabinetmakers and Bench Carpenters  
Tool and Die Makers  
Power Plant Operators  
Fabric and Apparel Pattern Makers  
Certified Welder  
Boilermaker  
Foundry Core, Pattern Maker  
Composite Fabricator

### Professional Level Careers

*(with BS or BA degree)*

Publisher, Editor  
Production Developer  
Industrial Technology Instructor  
Network Engineer  
Publications Management  
Multimedia Author  
Manufacturing Engineer  
Mechanical Engineer  
Tooling Engineer  
Design Engineer  
Quality Control Inspector  
Pressurized Vessel Engineer  
Fabrication Designer

College: \_\_\_\_\_  
 High School(s): \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Sector: \_\_\_\_\_  
 Pathway: \_\_\_\_\_  
 Program: \_\_\_\_\_  
 \_\_\_\_\_

	Grade	English	Math	Science	Social Studies	Required Courses			Grade 9-12 Dual Enrollment Options
						Recommended Elective Courses	Other Elective Courses	CTE Courses	
Secondary	9								
	10								
	11								
	12								
Postsecondary	Year _____ Term _____								
	Year _____ Term _____								
	Year _____ Term _____								
	Year _____ Term _____								
	Year _____ Term _____								
	Year _____ Term _____								

Required Courses:  
 Recommended Required Courses:  
 Career Education Courses:  
 Credit-Based Transition Programs (e.g., Dual Enrollment, Articulated Courses, 2+2+2)  
 Assessments, Advising, or Additional Preparation During Summer Breaks