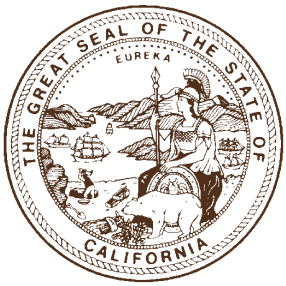
Manufacturing Careers

Employment Development Department
State of California

August 2005

LMID
Labor Market Information Division
"Your Information Source"



STATE OF CALIFORNIA

LABOR AND WORKFORCE DEVELOPMENT AGENCY

EMPLOYMENT DEVELOPMENT DEPARTMENT

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Manufacturing Careers

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August 2005

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Foreword

Front page headlines often note the movement of domestic manufacturing, call center, and information technology jobs offshore. Manufacturing jobs have made the most visible exodus in the public's mind. Despite this common perception of decline, the National Association of Manufacturers (NAM) voices a serious shortage of qualified applicants. California manufacturers echo those concerns. As manufacturing moves further into computer-controlled automation, more workers need computer skills. Even entry-level positions in warehousing need computer literacy. While direct production jobs have felt the effects of offshoring and automation, manufacturing still employs over 1.5 million workers in California, many of whom will retire over the next decade.

Manufacturers increasingly use temporary help services for their workforce as they strive to cut labor costs and maintain a lean and flexible operation. This shift of employer-of-record to the employment services industry skews manufacturing industry employment data, making it appear to have declined more than it actually has. The table below lists a sampling of occupations commonly found in manufacturing and shows their projected growth in employment services.

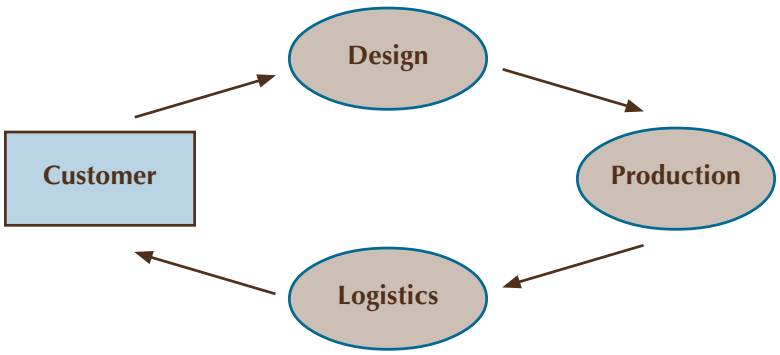
Growth of Selected Occupations in Employment Services Industry

Occupation	Estimated Number of Workers 2002	Estimated Number of Workers 2012	Employment Change – Numerical –	Employment Change – Percent –
Tool and Die Makers	300	500	200	67%
Machinists	2,700	4,500	1,800	67%
Helpers, Production Workers	6,600	9,500	2,900	44%
Inspectors, Testers, Sorters, Samplers, and Weighers	3,500	5,600	2,100	60%
Hand Packers and Packagers	17,300	27,700	10,400	60%
Packaging and Filling Machine Operators and Tenders	6,600	11,900	5,300	80%
Team Assemblers	4,800	7,100	2,300	48%

Source: California Industry and Occupation Staffing Patterns, LMID, EDD.

The California Regional Economies Project (CREP), a joint effort of the California Workforce Investment Board and the California Economic Strategy Panel, drafted a 2004 report, "Manufacturing in Transformation-Economic Change and Employment Opportunities in the Design, Production, and Logistics Value Chain." The CREP report redefines manufacturing to include design and logistics as well as the production occupations. Logistics roles have become increasingly critical due to the trend toward lean manufacturing with just-in-time inventory.

CREP's Manufacturing Value Chain



Foreword

Purpose

One of CREP's goals is to "help individuals navigate their own transition to new employment opportunities." The Labor Market Information Division (LMID) developed *Manufacturing Careers* to support CREP as well as the President's High Growth Job Training Initiative. *Manufacturing Careers* will bring manufacturing career opportunities to the attention of high school and community colleges students, as well as other individuals, to assist them in making informed career choices.

Selection Process

The CREP identified 104 manufacturing industries important to California's economy. Using that list, LMID staff applied the California Industry and Occupation Staffing Patterns to determine the largest occupations found in these industries. Staff eliminated occupations found in all industries, such as administrative support staff, and occupations showing decline or no growth. The LMID staff interviewed a small sample of employers to further identify new and growing occupations and occupations presenting recruitment challenges. The resulting list covers 70 manufacturing occupations.

Manufacturing Careers

Customers can access *Manufacturing Careers* at the LaborMarketInfo Web site, www.labormarketinfo.edd.ca.gov, and download or print briefs of interest. Each occupational note includes standard topics found in LMID's other occupational resources: a descriptive overview of the occupation, common tasks, important skills, knowledge, and abilities, California outlook and wages, trends, working conditions, training, finding the job, advancement, and further sources of information.

NEW!

The LMID staff added several features to enhance the user-friendliness of *Manufacturing Careers*:

- Every note has a **Table of Contents** with internal links to each section. The reader can go directly to the desired topics.
- **Recommended High School Course Work** is now a subsection heading to encourage students to think about how their school subjects relate to jobs.
- **Where Do I Find the Job?** now provides a list of the top industry sectors employing each occupation. Customers can input these sectors into the *Search for Employers by Industry* feature at the LMID Web site, www.labormarketinfo.edd.ca.gov. Compiled from a commercial employer database, the resulting list supplies employer names, size of firm, and contact information at the state and county level.
- *Manufacturing Careers* link to short (1 to 2 minute) career videos about an occupation when available. These career videos are produced by the Department of Labor for use by all states.

The Challenge

The transformation of California manufacturing to the value chain of design, production, and logistics requires a skilled workforce. Employers cite a lack of soft skills in workers and a need for computer skills. A Japanese manufacturer recently chose to locate in Canada because of U.S. workers' reported lack of literacy. As manufacturing moves further into computer-controlled automation, more workers need computer skills. Today even light industrial occupations, such as assemblers and material handlers, need basic computer and business application knowledge as they use scanners to track inventory and make adjustments to electronic stockrooms. The image of manufacturing as a declining industry needs transformation to interest young people in seeking careers in this industry and provide an incentive to train for manufacturing occupations.

Introduction

Are You Considering a Career in Manufacturing?

Think of all of the products you use in your life, from a hairbrush to a mattress. Manufacturers produce numerous products in daily demand by customers, such as household appliances, furniture, foodstuffs, cosmetics, paper, and cleaning goods, to name just a few.

Do you find yourself trying to make things work better? Do you like to tinker? Are you fascinated by how things work? There are many things to consider when choosing a career. Would it make your day to be out and about, see something, and know "I was part of making that"?

Facts About Today's Manufacturing Careers

The common impression of California manufacturing is that it is an industry in decline. While there has been a loss of traditional low-skilled production jobs due to advances in technology, the truth is that there are still many career opportunities in manufacturing.

Manufacturing employers face recruitment difficulties because many students do not consider manufacturing careers. In the past manufacturing has had an unfavorable image of dangerous, assembly line jobs in unsanitary environments. Modern manufacturing is changing. With the advances in technology and robotics there are fewer production positions available. More job opportunities exist requiring advanced technical skills and higher levels of education.

The Manufacturing "Value Chain"

A new manufacturing model is emerging in California. It is best to think of today's manufacturing as a "value chain" that combines design and logistics with just-in time, lean production to deliver directly to the customer.[1] Traditional production jobs are declining, but jobs in design and logistics are growing.

As detailed in the report *Manufacturing in Transformation* by the California Regional Economies Project (CREP), the value chain comprises three distinct areas: design, production, and logistics.

- Design includes companies that provide engineering services, specialized design, and management/technical consulting.
- Production includes companies that directly produce a good. These firms may use the design or logistics of another firm.
- Logistics includes freight, warehousing, and delivery companies that move goods from producers to customers and end users.[2]

"Lean manufacturing" describes the practice of ordering raw materials as needed for production and maintaining low product inventory numbers in amounts required to meet incoming orders. Lean manufacturing techniques help reduce production and storage costs and enable California manufacturers to maintain a competitive edge with foreign manufacturers.

[1]Manufacturing in Transformation: Economic Change and Employment Opportunities in the Design, Production, and Logistics Value Chain. California Regional Economies Project (CREP), Collaborative Economics, September 2004, p. 6.

[2]Ibid., p. 15-16.

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Introduction

Getting to Know Yourself

Does a career in manufacturing, or making things, interest you? It can be a lot of fun. However, remember that different things excite different people. Think first about what kinds of things you enjoy doing, what kinds of things you are praised for, and what kinds of things you would do even if no one in the world praised you for them.

One of the most important first steps in a career search is getting to know yourself well. People find the greatest job satisfaction in occupations that match their personalities. You may want to take an interest assessment as one of your first steps when investigating career choices. Interests usually refer to the like or dislike of certain tasks or activities. An interest assessment will help you to relate your personal interests to career opportunities. This information will help you to select the best personal job match before investing time and effort in an education or training program.

Ask your school counselor or advisor to schedule an interest assessment. There are a wide variety of interest assessment tools available. Or, try the on-line self-assessment at the California Career Zone: www.cacareerzone.org.

Getting Started

Think about what you excel at and your personal likes and dislikes. Examine the *Manufacturing Careers* to explore information on a variety of manufacturing careers. Select a few occupations that interest you the most.

Factors in a Career Choice

This table is a worksheet that helps you compare occupations. The first column lists factors to consider when making a career choice. From your review of the *Manufacturing Careers*, select up to three occupations that interest you the most. Enter the names of the occupations in columns two through four. Review each factor in column one. Enter either a "+" or "-" sign to indicate if the occupation satisfies your liking for each factor. (Refer to the example in column five.) Add the total number of positive answers (+) for each occupation. The occupation totaling the highest number of positive answers is the best match for the criteria you chose. If more than three occupations appeal to you, make a copy of the sheet and repeat the process.

After you have narrowed your choice to one or two occupations you want to investigate further, use the resources suggested in the *Manufacturing Careers* for further exploration. Speak to a few people who currently work in the field to inquire about what their worklives are like. What do they like about this type of work? How did they get where they are? If they had the opportunity to select a career all over again, would they select the same career? What are their reasons? Also, ask if there are volunteer positions or job shadowing opportunities available. Such activities will allow you to observe the daily tasks of the manufacturing occupations that interest you. This will help you decide what type of job suits you the best before you invest time and money in training.

Anatomy of the *Manufacturing Careers*

The following headings describe the individual sections within each of the *Manufacturing Careers*. When a career video is available for the occupation, an icon, like this one, only larger, will appear in the *Table of Contents* at the top of the page.

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Introduction

Anatomy of the *Manufacturing Careers* (continued)

What They Do

Are you curious about what duties employees perform all day? *What They Do* provides a brief job description that outlines the assignments and routines for the occupation. Does this job appeal to you? If so, review the *Manufacturing Career* in more detail.

Tasks

This section describes the routine daily tasks performed by workers in this occupation. Review the list of tasks. Does this job sound like a job that you would enjoy? Are you interested in researching this occupation further? Detailed occupational descriptions may be located in the Occupational Information Network (O*NET) at http://online.onetcenter.org.

Important Skills, Knowledge, and Abilities

This list outlines the key skills, knowledge, and abilities needed to succeed in the occupation. Think about your own skills, knowledge, and abilities. Then think about the skills, knowledge, and abilities required for different jobs in manufacturing. This activity will help you to identify skills that you may need to develop or acquire to pursue your career goals.

Note: When the *Manufacturing Careers* include more than one occupational title, the skills, knowledge, and abilities are combined in one list.

Work Environment

The *Work Environment* describes the general daily working conditions that you may expect to find when you report to work each day. Does the job involve heavy lifting? Do employees work alone or with the public? Are there potential safety hazards? If so, are safety precautions explained or is protective equipment available? What shifts and hours are employees usually expected to work?

Job Outlook

There are many important issues to consider when exploring career choices. Does the job pay well? Will the job meet your cost of living requirements? The *Job Outlook* provides the California statewide hourly wages paid for the occupation from the 25th to 75th percentile.

Will you be able to find a job easily? Is the job secure? What is the future job growth expected for the occupation? You will want reassurance there will be adequate future job openings before undertaking a job-training program. The *Job Outlook* lists the estimated number of job openings through 2012 and the estimated annual openings in California (see chart example below).

Standard Occupational Classification	Estimated Number of Workers 2002	Estimated Number of Workers 2012	Average Annual Openings	2005 Wage Range (per hour)
Packaging and Filling Machine Operators and Tenders				
51-9111	43,800	54,500	1,940	$8.10 to $13.48

These figures do not include self-employment.
Average annual openings *include new jobs plus openings due to separations.*
Source: www.labormarketinfo.edd.ca.gov, Employment Projections by Occupation and OES Employment & Wages by Occupation, Labor Market Information Division, Employment Development Department.

Introduction

Anatomy of the *Manufacturing Careers* (continued)

Trends

What are the latest developments affecting the growth or decline of the occupation? Technological advances may reduce the need for workers in one area or increase the need for employees in other related occupations. This section also discusses the current rate of occupational growth. For example, the occupation may be growing faster than average, or about average, or at a slower than average rate in comparison to all California occupations over the 2002 through 2012 period. This information helps you to determine if you will find it challenging or fairly easy to find employment in future years.

Training/Requirements/Apprenticeships

Where do you get the necessary training? Will you be able to work your way up? Possibly. But remember, the more knowledge and education you can get up front, the greater your options. There are many places to get general training and education in California. The Training/Requirements/Apprenticeships section displays the typical entry-level training path for manufacturing occupations. This section also provides *Recommended High School Course Work* that will build helpful foundations for students interested in pursuing manufacturing careers.

To further explore local education, training, and apprenticeship programs, access:

- www.labormarketinfo.edd.ca.gov.
- Select the *Career Cente*r tab.
- Scroll down to the *Training and Apprenticeships* section.
- Select the training directory that interests you the most.

Where Do I Find the Job?

So you already have the training or experience needed to enter this field, but how do you find local firms who typically hire this occupation so you can start your job search? *Where Do I Find the Job* leads you directly to lists of specific employers in your area who typically hire this occupation, and provides information such as phone numbers, street addresses, number of employees, and fax numbers. This information is from a non-confidential employer database, available through the LaborMarketInfo Web site. The Department of Labor has a license agreement with InfoUSA to provide this information.

To get a list of local or statewide employers, do the following:

- Access www.labormarketinfo.edd.ca.gov.
- Select the *Career Center* tab from the menu bar at the top of the page.
- Select *Search for Employer by Industry* under the *Search for Employers* section on the right hand side (scroll down).
- Enter the industry name provided in each *Manufacturing Career*. Follow step-by-step prompts to obtain employer addresses for the occupation, industries, and local areas that interest you.

This section also includes a list of yellow page headings that will lead you to listings for private firms.

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Introduction

Anatomy of the *Manufacturing Careers* (continued)

Where Can the Job Lead?

Are you interested in seeking promotions in your selected career field? *Where Can the Job Lead* provides information about the usual career moves, advancement, or promotional opportunities that are possible for specific manufacturing occupations.

Other Sources of Information

Other Sources of Information helps you research an occupation in more depth. Generally, this section provides the name of professional associations for the occupation. These associations may offer further career information about requirements, training, and certification.

Manufacturing at a Glance

Are you looking for labor market information? The *Manufacturing at a Glance* table offers an overview of the manufacturing occupations profiled in this report. Occupations are grouped by CREP value chain area—design, production, or logistics. Within each value chain area, the occupations are arranged by recommended training levels, highest to lowest, and then by earnings. Annual average openings for the period 2002–2012 reflect both occupational growth and the need to replace workers permanently leaving the field.

Are you also curious about labor market information for your local area? Would you like to know what jobs are in demand or what wages are offered in your county? To find out, access the Labor Market Information Division's Web site www.labormarketinfo.edd.ca.gov, then select the *Career Center* tab, and complete the information in the *Occupation Profile* tool. LaborMarketInfo provides a bounty of labor market information for your career research. You can set up your own *MyLMI* page to save your research findings as you explore career options. You can even save your job search preferences and check back to see if new job openings are available.

Do You Need a Little Extra Help Beginning Your Work Search?

Helpful Links

Are you interested in exploring manufacturing occupations in more detail? The *Helpful Manufacturing Links** page provides direct Internet links to trade or professional associations offering information about the latest developments in manufacturing and skill certification programs. This section is arrayed in alphabetical order and includes a brief description of the information featured on each of the Web sites.

WorkSmart

Can you also benefit from tips about how to:

- Prepare for a job interview.
- Fill out an application.
- Write a résumé?

Log on to WorkSmart for job search tips at www.worksmart.ca.gov.

**The Employment Development Department (EDD) is providing Internet links for information only. The inclusion of an organization on this list does not imply endorsement of the organization by EDD.*

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Factors in a Career Choice

Listed below are aspects of a career or job choice that can make the difference between your satisfaction and dissatisfaction. Select three occupations you are thinking about and fill in the blanks in the column headings below. Now, consider each factor in relation to your preferences and needs. Use career center staff and resources to help you find the information. Talk to people in the fields you are considering. Indicate with a "+" or a "–" sign whether an occupation satisfies your preferences for each factor.	Occupation #1	Occupation #2	Occupation #3	**Example**
Specific Work Performed What tasks are performed in the job? Would I be primarily working with people, information, or things? Is that what I want to do? Are these the kind of people I like to help or serve?				+
Skills, Knowledge, and Abilities Do I possess the skills and abilities needed to enter the occupation? Do I have the potential to develop them? Do I enjoy using these skills?				+
Work Setting Where would I work? Is this a setting I would like? What are the conditions (indoors, outdoors, noisy, etc.)?				+
Physical Capability Am I physically able to do this kind of work?				+
Employment Opportunity What are my chances for finding work in this field? Are there job openings now? In the future? Where are they? Will I be competitive?				+
Compensation What salary could I expect at the entry level? What do experienced workers earn? Are there chances for overtime or bonuses? What kind of benefits could I expect in this field? Does the salary meet my needs?				–
Hours What are the usual hours? Full-time or part-time? Is shift work required?				–
Preparation Am I willing and able to get the training required? Do I have the time and money needed for training? Are there different ways to enter the occupation?				+
Licenses and Certificates Are certificates or licenses required? Can I qualify for them?				n/a
Opportunity for Advancement What are my chances of moving up in the field? What is the typical way to advance? Am I willing and able to do what it takes to advance?				+
Values Is this work compatible with my values? Will this kind of work help me reach my long-range goals?				+
Interests Would I like this type of work enough to make it a career?				+
Other				n/a
Results Total the number of positive responses (+) for each occupation under consideration. Which occupation is the best match for you?				***9***

Manufacturing at a Glance

Value Chain	Occupation	Minimum Training*	Median Hourly Wage 2005	Average Annual Openings
DESIGN	Computer Hardware Engineers	B	$44.36	470
	Computer Software Engineers, Systems Software	B	$43.35	2,750
	Chemical Engineers	B	$42.74	100
	Aerospace Engineers	B	$42.45	490
	Computer Software Engineers, Applications	B	$41.10	3,760
	Electronics Engineers (except Computer)	B	$40.90	1,070
	Electrical Engineers	B	$38.63	570
	Industrial Engineers (Quality Engineers)	B	$36.85	670
	Mechanical Engineers	B	$36.85	710
	Graphic Designers	B	$21.20	690
	Electrical and Electronic Engineering Technicians	A	$24.18	1,010
	Mechanical Drafters	VOC	$23.10	110
	Electrical and Electronics Drafters	VOC	$22.91	160
PRODUCTION	Chemists	B	$27.43	580
	Chemical Technicians	A	$17.65	220
	Semiconductor Processors	A	$14.57	330
	Electrical and Electronics Repairers, Commercial & Industrial	VOC	$23.09	340
	Welders, Cutters, Solderers, and Brazers	VOC	$15.00	1,410
	First-Line Supervisors/Mgrs of Production & Operating Workers	WE	$21.90	2,260
	Numerical Tool and Process Control Programmers	OJT-LT	$24.74	40
	Tool and Die Makers	OJT-LT	$20.87	110
	Industrial Machinery Mechanics	OJT-LT	$20.79	360
	Millwrights	OJT-LT	$19.57	210
	Machinists	OJT-LT	$16.92	1,250
	Butchers and Meat Cutters	OJT-LT	$13.10	430
	Bakers	OJT-LT	$11.39	910
	Sheet Metal Workers	OJT-M	$20.17	1,050
	Painters, Transportation Equipment	OJT-M	$19.56	370
	Lay-out Workers, Metal and Plastic	OJT-M	$16.71	N/A
	Forging Machine Setters, Operators, & Tenders (Metal & Plastic)	OJT-M	$14.92	50
	Computer-Controlled Machine Tool Operators (Metal & Plastic)	OJT-M	$14.79	270
	Structural Metal Fabricators and Fitters	OJT-M	$14.51	230
	Printing Machine Operators	OJT-M	$14.39	410
	Heat Treating Equipment Setters, Operators, & Tenders	OJT-M	$13.81	50
	Milling & Planing Machine Setters, Operators, & Tenders	OJT-M	$13.59	40
	Multiple Machine Tool Setters, Operators, & Tenders	OJT-M	$13.51	240
	Mixing and Blending Machine Setters, Operators, and Tenders	OJT-M	$12.94	250
	Tool Grinders, Filers, and Sharpeners	OJT-M	$12.73	50
	Rolling Machine Setters, Operators, & Tenders (Metal & Plastic)	OJT-M	$12.69	100

***Minimum Training Key**

Occupations are arranged by highest minimum training level within Design, Production, and Logistics. Within the training level, occupations are ordered by wage—highest to lowest. Note that the training levels show the least amount of training required by the occupation.

B+ Work experience, plus a **B**achelor's degree or **higher**
B **B**achelor's degree
A **A**ssociate degree
VOC Post-secondary **voc**ational training
WE **W**ork **e**xperience
OJT-LT **L**ong-**t**erm **o**n-**t**he-**j**ob training, more than 12 months
OJT-M **M**oderate **o**n-**t**he-**j**ob training, 1 to 12 months
OJT-ST **S**hort-**t**erm **o**n-**t**he-**j**ob training, less than 30 days

Manufacturing at a Glance

Value Chain	Occupation	Minimum Training*	Median Hourly Wage 2005	Average Annual Openings
PRODUCTION	Lathe and Turning Machine Tool Setters, Operators, & Tenders	OJT-M	$12.48	100
	Extruding and Drawing Machine Setters, Operators, & Tenders	OJT-M	$12.33	260
	Drilling and Boring Machine Tool Setters, Operators, & Tenders (Metal & Plastic)	OJT-M	$11.96	110
	Cutting, Punching, and Press Machine Setters, Operators, & Tenders (Metal & Plastic)	OJT-M	$11.60	550
	Coating, Painting, and Spraying Machine Setters, Operators, & Tenders	OJT-M	$11.10	280
	Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, & Tenders	OJT-M	$10.79	220
	Grinding and Polishing Workers (Hand)	OJT-M	$9.98	220
	Molding, Coremaking, and Casting Machine Setters, Operators, & Tenders	OJT-M	$9.80	360
	Slaughterers and Meat Packers	OJT-M	$9.71	130
	Engine and Other Machine Assemblers	OJT-ST	$14.97	50
	Electromechanical Equipment Assemblers	OJT-ST	$12.22	170
	Electrical and Electronic Equipment Assemblers	OJT-ST	$11.84	400
	Coil Winders, Tapers, and Finishers	OJT-ST	$10.70	30
	Meat, Poultry, and Fish Cutters and Trimmers	OJT-ST	$9.81	300
	Food Batchmakers	OJT-ST	$9.78	360
	Painting, Coating, and Decorating Workers	OJT-ST	$9.66	170
LOGISTICS	Transportation, Storage, and Distribution Managers	WE	$33.89	390
	Cargo and Freight Agents	OJT-M	$18.76	390
	Truck Drivers, Heavy and Tractor-Trailer	OJT-M	$17.33	4,890
	Inspectors, Testers, Sorters, Samplers, and Weighers	OJT-M	$12.88	1,840
	Team Assemblers	OJT-M	$10.25	2,920
	Industrial Truck and Tractor Operators	OJT-ST	$14.01	2,020
	Conveyor Operators and Tenders	OJT-ST	$12.93	320
	Truck Drivers, Light or Delivery Services	OJT-M	$11.99	3,240
	Shipping, Receiving, and Traffic Clerks	OJT-ST	$11.85	2,720
	Packaging and Filling Machine Operators and Tenders	OJT-ST	$9.71	1,940
	Laborers and Freight, Stock, and Material Movers (Hand)	OJT-ST	$9.48	11,600
	Helpers, Production Workers	OJT-ST	$9.08	1,480
	Packers and Packagers (Hand)	OJT-ST	$8.22	4,100

Sources: 2002–2012 Projections of Employment for California and Occupational Employment Statistics Wage Survey, 1st Quarter 2005, California Employment Development Department, Labor Market Information Division.

***Minimum Training Key**

Occupations are arranged by highest minimum training level within Design, Production, and Logistics. Within the training level, occupations are ordered by wage—highest to lowest. Note that the training levels show the least amount of training required by the occupation.

- **B+** Work experience, plus a **B**achelor's degree or **higher**
- **B** **B**achelor's degree
- **A** **A**ssociate degree
- **VOC** Post-secondary **voc**ational training
- **WE** **W**ork **e**xperience
- **OJT-LT** **L**ong-**t**erm **o**n-**t**he-**j**ob training, more than 12 months
- **OJT-M** **M**oderate **o**n-**t**he-**j**ob training, 1 to 12 months
- **OJT-ST** **S**hort-**t**erm **o**n-**t**he-**j**ob training, less than 30 days

Helpful Manufacturing Links

The following trade or professional associations offer valuable information about current developments and skill certification programs in manufacturing and related fields.*

American Chemical Society (ACS)
The ACS provides career development opportunities for all fields of chemistry. **www.acs.org**

American Institute of Graphic Arts (AIGA)
The AIGA is an association that promotes continuing excellence in graphic design. The site includes resource ideas for students and design job listings for members. **www.aiga.org**

American Society of Transportation & Logistics
The Society is a source of information for the traffic, transportation, and logistics fields and provides information about how to obtain professional certification in transportation and logistics. **www.astl.org**

American Trucking Association
Represents all aspects of the trucking industry and advocates to improve the business climate for trucking companies. This site provides the latest trends affecting the trucking industry. **www.truckline.com**

American Welding Society
Provides information about welding certification and renewal programs. This site also includes a résumé-posting feature for jobseekers. **www.aws.org**

California Department of Apprenticeship Standards (DAS)
This site furnishes the capability of searching for specific apprenticeship programs by occupational group and by county location. **www.dir.ca.gov/DAS**

Centers for Applied Competitive Technologies (CACT)
The CACT enhance the competitiveness of California's small and medium-sized manufacturers by facilitating the transfer and adoption of advanced and environmentally sound manufacturing technologies and techniques by assisting in the deployment of new technologies and continuous improvement techniques. They deliver education and training for workforce skills enhancement and technology development that contribute to a continuous learning environment and lifelong competencies for the in-place workforce. **www.cact.org**

GetTech
GetTech is a private-public partnership that encourages young people to prepare for the jobs of tomorrow. This national multimedia awareness campaign was designed by the National Association of Manufacturers, the Center for Workforce Success, and the U.S. Department of Commerce's Office of Technology Policy to prepare young people for a technology-driven future. **www.gettech.org**

International Society of Certified Electronics Technicians (ISCET)
The ISCET site presents on-line training and voluntary certification opportunities for electronic technicians. This site also includes a résumé-posting feature for jobseekers. **www.iscet.org**

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Helpful Manufacturing Links

International Warehouse Logistics Association (IWLA)
The IWLA is comprised of companies that provide third party warehousing, transportation, and logistics outsourcing services to customers. They also offer a voluntary certification educational program for Certified Logistics Professional. **www.iwla.com**

Manufacturing Is Cool
Are you interested in exploring careers in manufacturing or engineering? The Manufacturing Is Cool site is an excellent place to start as it provides a wealth of information about schools teaching manufacturing, scholarships, competitions, special events, and much more. **www.manufacturingiscool.com**

National Association of Manufacturers (NAM)
The NAM represents the interests of both small and large manufacturing companies and advocates for a healthy business climate for manufacturing. This site presents the latest trends and legislative information that affects the future of manufacturing in the United States. **www.nam.org**

National Institute for Metalworking Skills (NIMS)
The NIMS organization consists of metalworking trade associations, companies, and educators dedicated to developing a skilled workforce for the metalworking industry. This site provides the requirements and on-line testing to obtain voluntary credentials in Machining Level I and Metal Stamping Level II. **www.nims-skills.org**

National Paint and Coatings Association (NPCA)
The NPCA is a trade organization representing paint and coatings manufacturers, suppliers, and distributors. The site includes a variety of information about current events, legislative changes, Environmental Protection Agency requirements, and a technical training calendar. **www.paint.org**

Pharmaceutical Research and Manufacturers of America (PhRMA)
The PhRMA represents pharmaceutical research and biotechnology companies dedicated to developing new medicines for patient care. This site presents the latest trends and legislative developments that affect the pharmaceutical industry. **www.phrma.org**

Printing Industries of America
This site is an information network for the graphic arts industry providing information on industry trends, training trade shows, workshops, and seminars. An on-line job bank is available to both job seekers and employers. **www.gain.net**

Society of Industrial Microbiology
The Society of Industrial Microbiology is a professional association that advances microbiological sciences as applied to industrial processes. The site features an on-line job bank service for job seekers and employers. **www.simhq.org**

Society of Plastics Industry (SPI)
The SPI is a trade association that represents the entire plastics industry. This site provides plastics workers with information about how to take the on-line exam to obtain voluntary certification for National Certification in Plastics (NCP). **www.socplas.org**

**The Employment Development Department (EDD) is providing the above links for information only. The inclusion of an organization on this list does not imply endorsement of the organization by EDD.*

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