Jobs for Which You Can Train Through Apprenticeship

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Would you like to become an expert in a trade—to develop a skill that will command a relatively good salary? One sure route is apprenticeship. There are other ways to learn a trade, of course. But, because employers recognize apprenticeship as an especially thorough training method, completing such a program increases your chances for employment and advancement.

Many apprenticeship programs do not require a high school diploma for entry. Requirements may vary but employers usually prefer to hire high school graduates. Age and other requirements also may vary, so be sure to check the regulations where you apply. Applications for an apprenticeship can be made to an employer, a labor union, the local State employment service office, or a joint apprenticeship and training committee.

This pamphlet contains a list of occupations that have apprenticeship training—selected from the 1980-81 *Occupational Outlook Handbook* of the Bureau of Labor Statistics. It highlights the training requirements for each. Included are occupations such as patternmaker, millwright, carpenter, and automobile mechanic.

These summaries cannot provide all the information you need, however. Omitted are details about apprenticeship programs and information on special talents, aptitudes, or interests a job may require. For more information about an occupation, look in the *Occupational Outlook Handbook*. It describes the nature of the work, working conditions, places of employment, job qualifications and advancement prospects, employment outlook, and earnings for hundreds of occupations. It also lists related occupations and other helpful sources of career information.

The *Handbook* is available in offices of school guidance counselors and employment counselors and in school and public libraries. Or it may be purchased for $8 by check or money order from the nearest regional office of the Bureau of Labor Statistics. A list of offices and their addresses appears at the back of this pamphlet.

Reprints from the *Handbook* also are available, each containing information about several related occupations. At the end of this pamphlet is a list of reprints along with an order form that includes information on prices.

This pamphlet is one in a series of five prepared by the Bureau of Labor Statistics. Each pamphlet discusses a group of occupations for which a particular educational or training background is applicable. The other titles in the series are: *Jobs for Which You Can Qualify if You're Not a High School Graduate; Jobs for Which You Can Qualify If You're a High School Graduate; Jobs for Which You Probably Will Need Some College or Specialized Training;* and *Jobs for Which You Probably Will Need a College Education.*

Industrial Production and Related Occupations

Foundry Occupations

Patternmakers. A 5-year apprenticeship is considered the best way to learn this trade. Vocational school courses in patternmaking, metalworking, and machining may be credited toward completion of the apprenticeship. Because of the precise skills needed, apprenticeships for wood and metal patternmaking are separate. A high school diploma generally is required.

Molders. Completion of a 4-year apprenticeship is the recommended way to learn skilled hand molding. Workers who have this training also are preferred for some kinds of machine molding. Less skilled hand molding jobs can be learned on the job in 2 to 6 months. An eighth grade education usually is the minimum requirement for apprenticeship; however, many employers prefer high school graduates.

Coremakers. Completion of a 4-year apprenticeship is the recommended way to learn skilled hand coremaking. Workers with this training also are preferred for the more difficult machine coremaking jobs. Although the minimum requirement for apprenticeships is an eighth grade education, most employers prefer high school graduates. Inexperienced workers may learn less skilled coremaking on the job.

Machining Occupations

All-round machinists. A 4-year apprenticeship is the best way to learn the trade; however, some companies have training programs that require less than 4 years for machinists who specialize in one type of product or machine. Many machinists learn their skills on the job. A high school diploma is strongly recommended.

Instrument makers (mechanical). Many instrument makers learn their trade through 4-year apprenticeships. Others advance from machinists or skilled machine tool operators after 1 or 2 years of shop experience. Employers generally prefer high school graduates, especially for apprenticeship programs.

Setup workers (machine tools). Setup workers usually must be all-round machinists. To make metal parts according to specifications, they must know how to operate more than one type of machine tool and be able to plan the sequence of a machining operation.

Tool-and-die makers. The best way to learn this trade is through a 4-year apprenticeship, but many workers learn in vocational school programs or on the job. Several years of experience often are required after completing an apprenticeship for more difficult tool-and-die work. High school graduates are preferred for apprenticeships.

Printing Occupations

Compositors. All-round compositors usually train through a 4-year apprenticeship program. The program may be shortened for apprentices with previous experience or schooling. Applicants for apprenticeships generally must be high school graduates. An increasing number of people learn their skills on the job by working as helpers for several years.

Lithographers. Although most lithographers learn their trade on the job by helping experienced lithographers, employers recommend a 4- or 5-year apprenticeship program. These programs, which may emphasize a specific craft such as camera operator or platemaker, attempt to introduce an apprentice to all lithographic operations. Applicants for apprenticeships usually must be high school graduates.

Photoengravers. Most photoengravers learn their skills through a 5-year apprenticeship program. Applicants for apprenticeships usually must be high school or vocational school graduates.

Electrotypers and stereotypers. Although a 4-year apprenticeship is the usual preparation for these trades, apprenticeships have not been available in the last several years due to the declining demand for electrotypers and stereotypers. Many experienced electrotypers and stereotypers are being retrained for other jobs.

Printing press operators and assistants. Apprenticeship is the recommended way to learn the trade. The program in commercial printing shops lasts 2 years for press assistants and 4 years for press operators. Applicants for apprenticeships usually must be high school graduates. Many workers learn their skills by working as helpers or press assistants, or by combining work experience and training in vocational schools.

Bookbinders and bindery workers. A 4- or 5-year apprenticeship is recommended for skilled bookbinders. Applicants for apprenticeships usually must be high school graduates. Because bindery workers may be less skilled than bookbinders, most learn their trade by working informally on the job from several months to 2 years. Some, however, complete formal apprenticeships.

Other Industrial Production and Related Occupations

Automobile painters. Most of these workers acquire their skills by working for 3 to 4 years with experienced painters. A small number learn through a 3-year apprenticeship.

Blacksmiths. Many blacksmiths are trained by working as helpers in blacksmith shops or industrial firms that employ blacksmiths. Some enter through 3- or 4-year apprenticeship programs. Blacksmiths who shoe horses are called farriers. Most farriers learn their craft by assisting experienced workers. Others take a 3- or 4-week course in horseshoeing before gaining experience on their own or as a farrier's assistant. These courses are taught in several colleges, as well as at private horseshoeing schools. At least 3 to 5 years of special training or experience are needed to learn to shoe racehorses. Farriers who wish to work at racetracks must pass a licensing examination.

Boilermaking occupations. This group includes layout workers, fitters, and boilermakers. Most layout workers and fitters are hired as helpers and learn the craft by working with experienced employees for at least 2 years. Many boilermakers also learn their trade on the job, although most training authorities recommend a 4-year apprenticeship. For all three occupations, employers prefer high school or vocational school graduates.

Electroplaters. Most learn their trade on the job as helpers to experienced workers, but some learn through 3- or 4-year apprenticeship programs. Applicants for apprenticeships usually must be high school graduates. A few take 1- or 2-year courses in electroplating at junior colleges, technical institutes, and vocational schools.

Forge shop occupations. Most workers learn these trades on the job. Generally, they start as helpers or heaters on hammer or press crews. Workers advance to more skilled occupations as they gain experience and as openings occur. Some forge shops offer 4-year apprenticeship programs for skilled jobs, such as die sinker and heat treater. High school graduation may be preferred for more skilled occupations.

Millwrights. Generally, these workers start as helpers and rotate from job to job for 6 to 8 years to acquire the necessary skills. Millwrights also are trained through 4-year apprenticeship programs.

Ophthalmic laboratory technicians. Most learn their skills on the job, but some learn through 3- to 4-year apprenticeship programs. Some technicians receive training while in the Armed Forces. Others attend community colleges or vocational or technical schools where they receive certificates, diplomas, or associate degrees in programs varying from 9 months to 3 years. Employers prefer high school graduates; applicants for apprenticeships usually must be graduates. Some states require technicians to be licensed. Applicants for a license must pass an examination.

Stationary engineers. Many start as helpers or oilers and acquire their skills informally during many years on the job. Technical or other training in vocational schools or home study can supplement this experience. A good background also can be obtained in the Navy or Merchant Marine. Most training authorities, however, recommend completion of a 4-year apprenticeship. Employers prefer to hire high school graduates. Many States and larger cities require stationary engineers to be licensed. Generally, a stationary engineer may qualify for one of several classes of licenses—each specifying the steam pressure or horsepower of the equipment the engineer may operate. A high school diploma may be required for higher class licenses.

Welders. Training varies for the several levels of skill within this occupation. Less skilled jobs can be learned on the job in a few months, but a skilled welder generally needs several years of training and experience. Many large companies train their own welders. Many employers prefer to hire applicants who have high school or vocational training in welding for entry to skilled jobs. A few companies have apprenticeship programs. An employer or government agency may require welders to pass a qualifying examination for work where the strength of the weld is highly critical.

Service Occupations

Food Service Occupations

Cooks and chefs. Most cooks acquire their skills on the job as kitchen helpers, although cooks increasingly have high school or post-high school vocational training in food preparation. Cooks and chefs may also be trained as apprentices under trade union contracts, by professional associations, or as part of employee training programs conducted by large hotels and restaurants. Employers usually prefer high school graduates, and applicants for apprenticeships generally must be graduates. The Armed Forces also are a good source of training and experience in food service. Most States require cooks and chefs to have health certificates showing that they are free of contagious diseases.

Meatcutters. Although many learn their skills informally on the job, most meatcutters complete a 2-year apprenticeship program. A few attend private schools that specialize in meatcutting. At the end of the training, apprentices are given a meatcutting test that their employers observe. Employers prefer high school graduates. Some States require meatcutters to have health

certificates showing that they are free of contagious diseases.

Personal Service Occupations

Barbers. All States require barbers to be licensed. To obtain a license, applicants must graduate from a State-approved barber school and be at least 16 years old (in some States 18). Educational requirements in States vary—some require graduation from high school, while others have no requirement at all. Many States require an examination for an apprentice license and a second examination, after 1 or 2 years of work, for a license as a registered barber. Many public and private schools and a few vocational schools offer a 9- to 12-month training course. Because some States do not recognize out-of-State training, apprenticeship work, or licenses, persons who wish to become barbers should review the laws of the State in which they wish to work before entering barber school.

Cosmetologists. All States require cosmetologists to be licensed. Most States require applicants for a license to be at least 16 years old and pass a physical examination. Educational requirements for licensure vary among States—some have no requirement, while others require graduation from high school. Successful completion of a State-approved cosmetology course is appropriate preparation to take an examination. In some States, completion of a 1- or 2-year apprenticeship program can substitute for graduation from cosmetology school, but few cosmetologists learn their skills this way. Both public and private vocational schools offer training in cosmetology. A daytime course usually takes 6 months to 1 year; an evening course takes longer.

Funeral directors and embalmers. All States require embalmers to be licensed. Although licensing standards vary by State, an embalmer generally must be 21, have a high school diploma or its equivalent, graduate from a mortuary science school, serve a 1- to 2-year internship, and pass a State board examination. About half of the States require a year or more of college in addition to training in mortuary science. About half of all mortuary science programs are offered by private vocational schools and last 1 year. The others are offered by colleges and junior colleges and usually are 2 years in length, although a few last 4 years. All but six States require funeral directors to be licensed. Most people obtain licenses for both embalmers and directors since requirements are similar. Directors also must have a special internship and take board examinations.

Protective and Related Service Occupations

Firefighters. In most communities, qualifying examinations are open to high school graduates who are at least 18. Those who score the highest on these examinations have the best chances for appointment. Experience as a volunteer firefighter or in the Armed Forces may help chances for appointment, too. Beginners in large fire departments generally are trained for several weeks at the city's fire school before assignment to local fire companies. Small communities either train firefighters on the job or hire experienced workers. A small number of fire departments have 3- to 4-year apprenticeship programs.

Construction Occupations

Bricklayers, stonemasons, and marblesetters. Most bricklayers learn their trade on the job, usually in 3 to 5 years. But some bricklayers and most stonemasons and marblesetters learn their skills through a 3-year apprenticeship program. Employers usually prefer applicants who have a high school diploma or its equivalent for apprenticeship programs.

Carpenters. The recommended way to learn this trade is to complete a 4-year apprenticeship. Most workers learn on the job, however, often by beginning as a helper to experienced carpenters and gradually acquiring skills. It takes much longer to become a skilled carpenter in this way than it does through an apprenticeship. Some knowledge of the trade also may be obtained through vocational school courses. Employers generally prefer to hire high school graduates.

Cement masons and terrazzo workers. Most learn their trade informally on the job in 2 to 3 years. Others complete a 2- or 3-year apprenticeship. Employers prefer to hire high school graduates.

Electricians (construction). Completion of a 4-year apprenticeship is the recommended way to learn the trade. Many electricians learn their skills on the job, however. Employers prefer high school or vocational school graduates who have 1 year of algebra. Applicants for apprenticeships must be high school graduates. Many cities require electricians to be licensed; applicants must pass a written test and may have to demonstrate their skill.

Floor covering installers. Most of these workers learn their skills on the job, usually beginning as helpers to experienced workers. Others qualify through 2- to 4-year apprenticeship programs. Individuals also may learn the basic skills as part of an apprenticeship in carpentry, tilesetting, bricklaying, or stone and marblesetting. Employers prefer to hire high school or vocational school graduates. Applicants for apprenticeships generally must have a high school diploma.

Glaziers (construction). Most glaziers learn their trade through 3-year apprenticeships. Others learn on the job and a few pick up the skills while working in another industry where glass is installed. Employers generally prefer to hire high school graduates.

Insulation workers. Most insulation workers learn their trade on the job. Others learn through a 4-year "improvership" program that is similar to an apprenticeship. A few insulation workers pick up their skills while working in another trade or in a manufacturing plant where applying insulation is part of their job. Employers prefer high school graduates who are licensed to drive.

Ironworkers (structural, ornamental, and reinforcing ironworkers; riggers; and machine movers). Most learn their skills on the job; however, completion of a 3-year apprenticeship program is recommended. Employers generally prefer high school graduates.

Lathers. Although many lathers acquire their skills informally on the job, completion of an apprenticeship is recommended. Depending on the local union operating the program, apprenticeships last 2, 3, or 4 years. Employers generally prefer high school graduates, and a diploma is required for an apprenticeship.

Operating engineers (construction machinery operators). Completion of a 3-year apprenticeship program including related classroom instruction is recommended. Some engineers who learn their skills on the job start as helpers or oilers and then progress from operating light equipment to highly complex construction machinery. A few individuals learn their skills while serving in the Armed Forces or through special heavy-equipment training schools. Most employers prefer high school graduates; a diploma may be required for entry into apprenticeship programs.

Painters and paperhangers. Although completion of a 3-year apprenticeship is recommended, apprenticeship opportunities are very limited. Informal on-the-job training is available through local contractors, however. Employers prefer to hire applicants who have a high school education.

Plasterers. A 3- to 4-year apprenticeship is the recommended way to learn the trade. Many plasterers learn the trade on the job, however, by working as plasterers' helpers or laborers. Employers generally prefer to hire high school graduates.

Plumbers and pipefitters. Although many learn their trade informally on the job, completion of a 4- to 5-year apprenticeship is recommended. Employers prefer high school graduates. Some localities require workers to be licensed; applicants must pass a written examination.

Roofers. The majority of roofers begin as helpers and learn their skills on the job. Completion of a 3-year apprenticeship is recommended, however. Employers prefer high school graduates.

Sheet-metal workers. Although many learn the trade informally on the job, completion of a 4-year apprenticeship program is recommended. A high school diploma is preferred by employers and is required for entry to apprenticeship programs.

Tilesetters. The best way to learn this trade is through a 3-year apprenticeship program. However, many workers acquire their skills on the job as helpers. When hiring apprentices or helpers, employers usually prefer high school or vocational school graduates.

Occupations in Transportation Activities

Railroad Occupations

Shop trades. Completing a 3- to 4-year apprenticeship program is the most common way to enter shop trades, although some helpers and laborers are upgraded to these jobs. A high school diploma is preferred.

Scientific and Technical Occupations

Drafters. Specialized training in technical institutes, junior and community colleges, extension divisions of universities, and vocational and technical high schools generally provides the best preparation for beginning drafters. The necessary skills also may be acquired by combining on-the-job training programs with part-time schooling, through 3- or 4-year apprenticeship programs, or in the Armed Forces. A high school diploma usually is required.

Mechanics and Repairers

Telephone Craft Occupations

Central office craft occupations. Though employees such as telephone operators or line installers generally fill trainee jobs, occasionally workers are hired from outside. New craft workers receive both classroom instruction and on-the-job training. Some vocational schools, particularly those in rural areas served by small independent telephone companies, also offer training. A few people learn these crafts through apprenticeship programs designed by State employment agencies in conjunction with local telephone companies. Because electrical wires usually are color coded, applicants must not be color blind.

Line installers and cable splicers. These workers usually are trained on the job. Classrooms are equipped with actual telephone apparatus, including poles and other fixtures to simulate working conditions. After several weeks, trainees generally are assigned to a crew for on-the-job training under a line supervisor. Some small independent telephone companies, particularly in rural areas, rely on local vocational and technical schools for classroom training. State employment agencies provide classroom training for a few 4-year apprenticeships. Training in installing telephone systems in the Armed Forces is helpful. Because wires are color coded, applicants must not be color blind.

Telephone and PBX installers and repairers. These workers are trained on the job. Telephone companies provide several weeks of classroom instruction supplemented by on-the-job training. Many small independent telephone companies, particularly in rural areas, rely on local vocational and technical schools to train workers. State employment agencies provide classroom training for a few 4-year apprenticeships. Because telephone wires are color coded, applicants must not be color blind. A high school diploma is preferred.

Other Mechanics and Repairers

Air-conditioning, refrigeration, and heating mechanics. Most workers start as helpers and learn their skills on the job in about 4 years. A few learn the trade through a 4-year apprenticeship program. In addition, many high schools, vocational schools, and junior colleges offer courses in air-conditioning, refrigeration, and other subjects that prepare students for entry jobs. Many employers prefer graduates of these programs because they require less on-the-job training. When hiring helpers, employers generally prefer high school graduates, and a diploma is required for entry into apprenticeship programs.

Automobile body repairers. Although most repairers learn this skill informally through 3 to 4 years of on-the-job training, completion of a 3- to 4-year apprenticeship is recommended. High school graduation is considered an asset.

Automobile mechanics. Most automobile mechanics learn their trade through 3 to 4 years of on-the-job experience, but additional time may be needed to learn a difficult specialty such as automatic transmission repair. Training authorities usually recommend completion of a 3- or 4-year apprenticeship program. Automobile mechanic training received in the Armed Forces is good preparation. A high school diploma is preferred.

Electric sign repairers. Most are trained informally on the job. Some learn their skills through 4-year apprenticeship programs as a sign repairer or electrician. Employers prefer high school graduates. Many cities require repairers to be licensed; applicants must pass an examination on electrical theory and local electrical codes.

Farm equipment mechanics. Most begin as helpers and learn their skills on the job. Employers generally prefer high school graduates who have a farm background. Usually, at least 3 years of on-the-job experience are necessary to become fully skilled. Some mechanics complete a 3- to 4-year apprenticeship program, while others learn through a vocational program.

Industrial machinery repairers. Most begin as helpers and rotate from job to job for several years. Others learn their trade through 4-year apprenticeship programs. A high school diploma is preferred.

Jewelers. These workers generally learn the jewelry trade on the job or in technical schools. In precious jewelry factories, 3- to 4-year apprenticeships are available for many skilled occupations. Some manufacturers sponsor training courses for their employees at local vocational schools. Vocational school courses in jewelry making and jewelry repair are a good source of training for someone outside the industry. Employers prefer high school graduates.

Maintenance electricians. Most acquire their skills on the job or through 4-year apprenticeship programs. It may take more than 4 years to learn the trade informally. A high school diploma usually is required. Many cities and counties require electricians to be licensed; an applicant must pass a written examination and may have to demonstrate skills.

Truck mechanics and bus mechanics. Most learn their skills on the job in 3 to 4 years, but completion of a 4-year apprenticeship program is recommended. A high school diploma is preferred by employers and strongly recommended for applicants for apprenticeships. For some jobs that require driving, mechanics must have a chauffeur's license.

Vending machine mechanics. Most mechanics learn their trade while working as general shop helpers or vending machine route drivers. Up to 3 years of on-the-job training are required to become a skilled mechanic. Some mechanics train through 3-year apprenticeships. A high school diploma is preferred by employers. A commercial driver's license and a good driving record are necessary.

Health Occupations

Dental Occupations

Dental laboratory technicians. Many technicians learn their skills on the job, usually in 3 to 4 years. High school graduates are preferred. Persons who receive dental laboratory training in the Armed Forces usually qualify for civilian jobs as technicians. After completing a 2-year training program in a junior college, college, or vocational or technical school, the trainee may need about 3 years of experience to become fully qualified. Some technicians complete apprenticeship programs.

Other Health Occupations

Dispensing opticians. Most learn their skills on the job. Employers prefer high school graduates, and graduation is required for formal training programs. Some dispensing opticians learn their skills through 2- to 4-year apprenticeship programs. In 1978, dispensing opticians in 20 States had to pass an examination to obtain the required license.

Ordering Occupational Outlook Handbook Reprints

There are 42 reprints from the *Occupational Outlook Handbook,* 1980-81 Edition, available for order. Each reprint contains a group of related occupational and industrial statements. For example, reprint 2075-35, Communications Occupations, includes statements on broadcast technicians, newspaper reporters, photographers, public relations workers, radio and television announcers, the radio and television broadcasting industry, and technical writers. A list of all reprints follows. A flyer that cross-references all *Occupational Outlook Handbook* occupations and industries to the reprints in which they appear may be obtained by using the reprint order form on the back page of this leaflet.

Occupational Outlook Reprints, 1980-81 Edition

Bulletin No.	Title
2075-1	Tomorrow's Jobs
2075-2	Metalworking Occupations
2075-3	Printing and Publishing Occupations
2075-4	Factory Production Occupations
2075-5	Clerical Occupations
2075-6	Office Machine and Computer Occupations
2075-7	Banking and Insurance Occupations
2075-8	Business Occupations
2075-9	Service Occupations
2075-10	Food Merchandising Occupations
2075-11	Protective and Related Service Occupations
2075-12	Education and Related Occupations
2075-13	Sales Occupations
2075-14	Construction Occupations — Structural
2075-15	Construction Occupations — Finishing
2075-16	Air and Water Transportation Occupations
2075-17	Railroad Occupations
2075-18	Driving Occupations
2075-19	Environmental Scientists and Conservation Occupations
2075-20	Engineering and Related Occupations
2075-21	Physical and Life Scientists
2075-22	Mathematics and Related Occupations
2075-23	Public Utilities Occupations
2075-24	Motor Vehicle and Machinery Repairers
2075-25	Machine Repairers and Operators
2075-26	Small Business Occupations
2075-27	Health Practitioners
2075-28	Health Occupations Dental auxiliaries, nursing, therapy and rehabilitation, health services administration

2075-29	Health Occupations Medical technologists, technicians, and assistants, dispensing opticians, ophthalmic laboratory technicians, medical record personnel
2075-30	Lawyers, City Managers, and Social Science Occupations
2075-31	Counseling and Related Occupations
2075-32	Social Service Occupations
2075-33	Performing Arts and Entertainment-Related Occupations
2075-34	Design Occupations
2075-35	Communications Occupations
2075-36	Agriculture and Logging and Lumber Mill Products Industries
2075-37	Energy-Producing Industries
2075-38	Petroleum Refining, Industrial Chemical, Drug, and Paper and Allied Products Industries
2075-39	Aluminum, Iron and Steel, and Foundry Industries
2075-40	Aircraft, Missile, and Spacecraft, Office Machine and Computer, Electronics, and Motor Vehicle and Equipment Manufacturing Industries
2075-41	Apparel, Baking, Laundry and Dry Cleaning, and Textile Mill Products Industries
2075-42	Government Occupations

The following is an alphabetical listing of the occupations included in this leaflet. Occupations are cross-referenced to the *Handbook* reprint in which they appear.

U.S. Department of Labor
Bureau of Labor Statistics
Washington, D.C. 20212

Official Business
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