



Ship Captains and Mates

What's this job all about?

Ship captains direct and navigate all kinds of ships in every type of waterway. Captains or masters are in command of ships. They set the course and speed and steer vessels to avoid hazards and other ships. They are also responsible for taking care of the business of the ship, which may include purchasing supplies, maintaining the vessel, or selling fish caught aboard a fishing vessel. On large ships, captains have deck officers or "mates" as assistants. Mates "stand watch," meaning they oversee the operation of a vessel for part of the day. On smaller vessels, there may be only one mate who alternates watches with the captain.

Alaska has a big need for captains and mates. In Southeast Alaska, the Alaska Marine Highway System is a major transportation link for communities and the people who operate the ships in the system are important to its success. Captains and mates can also be found on oil tankers, fishing and fish processing industry vessels, cruise ships, and Coast Guard vessels. Most mariners work according to a watch schedule aboard a ship. Generally the watch schedule is broken into four hours in the morning and four hours in the evening, but often overtime is required. Because mariners are working away from home, they often work seven days a week aboard the vessel for a period ranging from weeks to months. Some companies have their employees work a week on and a week off, while others work a month on and a month off. Your week or month off is the time you get off the ship to go home. Generally, travel to and from your home is paid for by the company you work for.

Here's what Ship Captains and Mates do:

- Use equipment such as depth finders and radar to watch for hazards.
- Gather information from lighthouses, buoys, and lights.
- Determine the ship's position using navigational aids, charts, and observations.
- Direct the crew who steer the ship, operate the engines, and signal to other vessels.
- Direct the people who perform maintenance or operate towing or dredging gear.
- Make sure proper procedures and safety practices are followed.
- Make sure machinery and equipment are in working order.
- Oversee the loading and unloading of passengers or cargo.
- Keep logs and records of the ship's movements and cargo.
- Stand watch for four hours and are off for eight hours while at sea.

How much money can I make?

Median wage: \$25.46 per hour.

Separate wage information is not available for ship captains and mates in Alaska, however, these occupations are included in the larger group of "ship captains, mates, and pilots." In Alaska, the median wage for this group is \$4,413 per month. Half of all ship captains, mates, and pilots earn between \$3,657 and \$5,394 per month (\$21.10 and \$31.12 per hour). Ship mates have less responsibility than captains, so their wages are usually lower than those of captains. Wages are higher for trips across the ocean than for other waters. Sometimes workers may wait months between jobs, so that can lower their yearly income. Many mariners who work full time on American ships receive benefits like health insurance and sick leave. Some employers also offer retirement plans.

How long does it take to receive training?

To work as a ship captain or mate, you must either complete a 4-year training program at a maritime academy or work your way up over many years; pass an exam; and have a merchant marine

HELPFUL HIGH SCHOOL COURSES

Below is a list of high school courses that will help prepare you for these jobs. While you do not have to take all of them, you should consider them in course planning. Some of these courses are also available at the technical or college level.

Business

Keyboarding/Word Processing
Introduction to Business/Business Management

Computer and Information Sciences

General Computer Applications
Leadership/Executive Internship

Energy, Power, and Transportation Technologies

Introduction to Mechanics
Marine Mechanics and Repair/Barge and Boat Operation
Energy and Power
Transportation Technology Work Experience

English Language and Literature

English and Language Arts (Four years)
Business and Applied English/Public Speaking

Healthcare Sciences

Emergency Medical Technology

Life and Physical Sciences

Earth Science/Geology/Chemistry
Physics/Principles of Technology/Advanced Physics courses
Integrated Science/Environmental Science
Astronomy/Marine Science

Mathematics

Pre-Algebra, Algebra/Geometry/Trigonometry
Pre-Calculus, Calculus
Probability and Statistics/Business Math

Military Science

Introduction to ROTC/Military ROTC/ROTC Drill

Second Language and Literature

Second Language

Social Sciences and History

World Geography/Advanced Geography courses
U.S. Government

Social Science

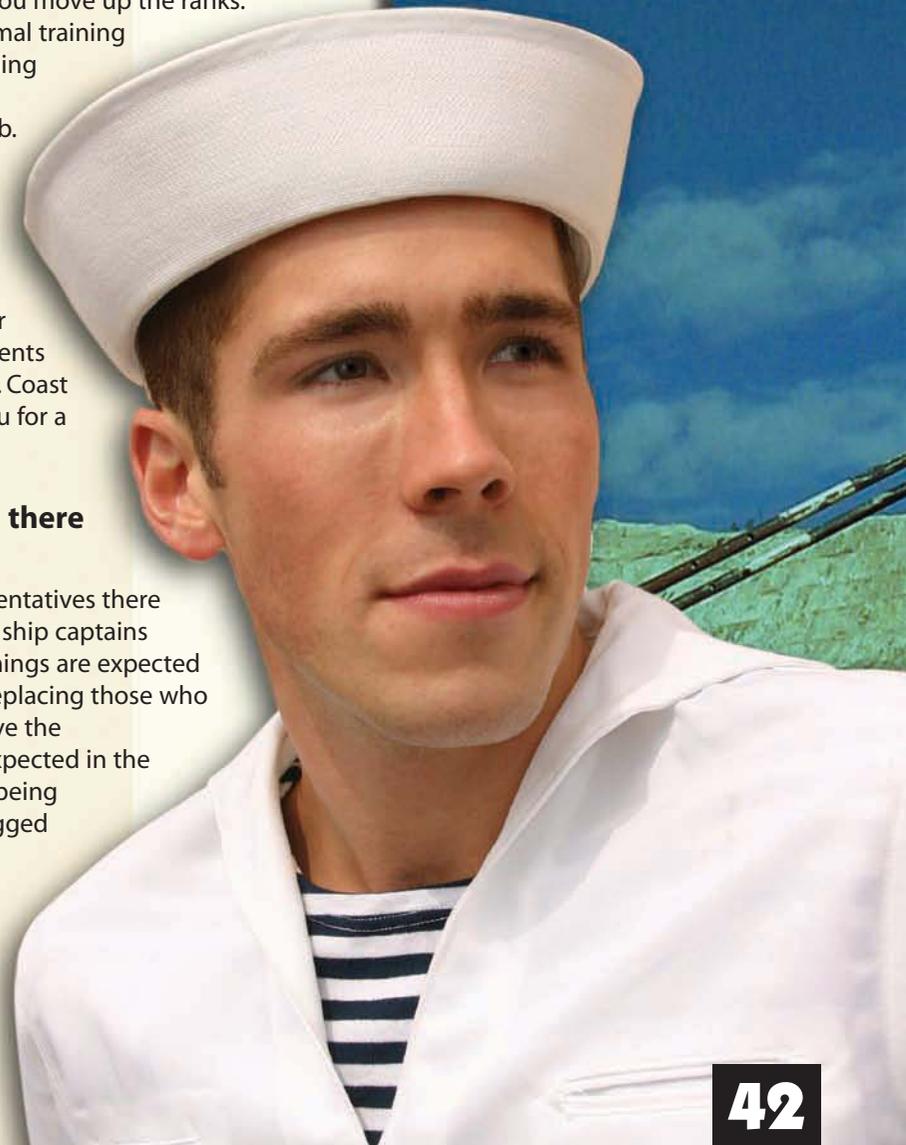
Psychology/Advanced Psychology courses
Sociology

license. Training programs for ship captains and mates are approved and monitored by the U.S. Coast Guard. The Coast Guard is an agency of the U.S. Department of Homeland Security. You must be licensed by this agency to operate vessels for hire. You can prepare for this occupation by attending the U.S. Merchant Marine Academy or one of six national academies. In Alaska, the Alaska Vocational Technical Institute (AVTEC) in Seward has classes that can lead toward certification and can help prepare you for a licensing exam. You also can prepare by gaining experience as a deckhand. Local unions provide experience and training. As you gain experience and pass rating exams, you move up the ranks. This route takes more time than formal training programs. Because of the fast changing demands of technology, you may receive additional training on the job. Employers may provide training or pay for college course work so you can update your technical skills or expand your administrative skills. Many ship captains and mates take training courses or seminars on their own to qualify for special endorsements to their licenses. Experience as a U.S. Coast Guard or Navy officer can qualify you for a merchant marine license.

When I'm ready to work, will there be job openings?

According to Alaska industry representatives there is indication for average growth for ship captains and mates through 2014. Most openings are expected to result from replacement needs; replacing those who retire or otherwise permanently leave the occupation. The fastest growth is expected in the cruise line industry. With new ships being built, both U.S. and international flagged ships will need employees. There is likely to be strong competition for the openings in this occupation.

Please see the Training Programs section of this booklet to find out more about training in these career fields in Alaska.



What's this job all about?

Surveying and mapping technicians help surveyors measure and map land. They are part of a team, called a survey party. The team is made up of a party chief, survey technicians, and laborers. The party chief may be an engineer, a licensed land surveyor, or a surveying technician. Survey technicians set instruments to measure the position and elevation of land. Mapping technicians use a variety of information to create maps. They use photographs, data from surveys, and other information. The work of surveying and mapping technicians is being changed by new technologies.

The Global Positioning System (GPS) uses radio signals relayed from satellites to locate points on the ground. Other advancements include earth resources data satellites, improved aerial photography, and geographic information systems (GIS). GIS are computerized data banks of spatial data. These systems are bringing surveying and mapmaking closer together. They also increase the need for computer training. If you work in this field in Alaska, there a number of high growth industries you might work in, including transportation, mining, oil and gas, and construction. You'll work both inside and outside, and will most likely travel to some remote locations.

Here's what Survey and Mapping Technicians do:

Survey Technicians

- Inspect, set up, operate, and adjust these instruments.
- Record measurements and help prepare survey reports.
- Measure vertical and horizontal angles using an instrument called a "theodolite."
- Measure distances between surveying points with electronic equipment. Use satellites to gather data.
- Set instruments to measure the position and elevation.
- Compile notes, make sketches, and enter collected data into computers.
- Supervise laborers who clear brush, drive stakes, and carry equipment.

Mapping Technicians

- Use drafting equipment and computers to make maps.
- Analyze aerial photographs to find data.
- Join several photos together.
- Research old maps and verify points by visiting sites to solve problems.
- Add boundaries, elevations, and color.
- Examine maps for errors and make corrections.
- Supervise workers who draft maps.

How much money can I make?

Median Wage: \$20.91 per hour.

In Alaska, the median wage for surveying and mapping technicians is \$3,624 per month (\$20.91 per hour). Half of all surveying and mapping technicians earn between \$2,936 and \$4,359 per month (\$16.94 and \$25.15 per hour). Nationally, the median wage for surveying and mapping technicians is \$2,607 per month (\$15.04 per hour). Half of all surveying and mapping technicians earn between \$2,007 and \$3,396 per month (\$11.58 and \$19.59 per hour). The technician's specialty and level of experience and responsibility also affect wages. Those who have supervisory duties usually earn higher wages. Surveying and mapping technicians who work full time usually receive benefits such as sick leave, paid vacation, and health insurance. Some employers also provide a retirement plan.

HELPFUL HIGH SCHOOL COURSES

If you are interested in becoming a surveying or mapping technician you should take courses that prepare you for college. Here is a list of high school courses that will help prepare you.

Some of these courses are also available at the technical or college level.

Agriculture and Renewable Natural Resources

Forestry

Computer and Information Sciences

Basic Computer/General Computer Applications

Computer Graphics

Computing Systems/Computer Technology

Network Technology

Computer Science and Programming

Drafting

Drafting, Technical and Mechanical

CAD Design and Software

Blueprint Reading

English Language and Literature

English and Language Arts (Four years)

Technical Writing/English Grammar

Fine and Performing Arts

Drawing and Painting/Photography

Life and Physical Sciences

Earth Science/Geology

Physical Science

Mathematics

Pre-Algebra/Algebra/Advanced Algebra

Geometry/Advanced Geometry

Trigonometry/Advanced Trigonometry

Physical Education

Physical Education

Fitness and Conditioning Activities

Social Sciences and History

World Geography

Geography

U.S. Government

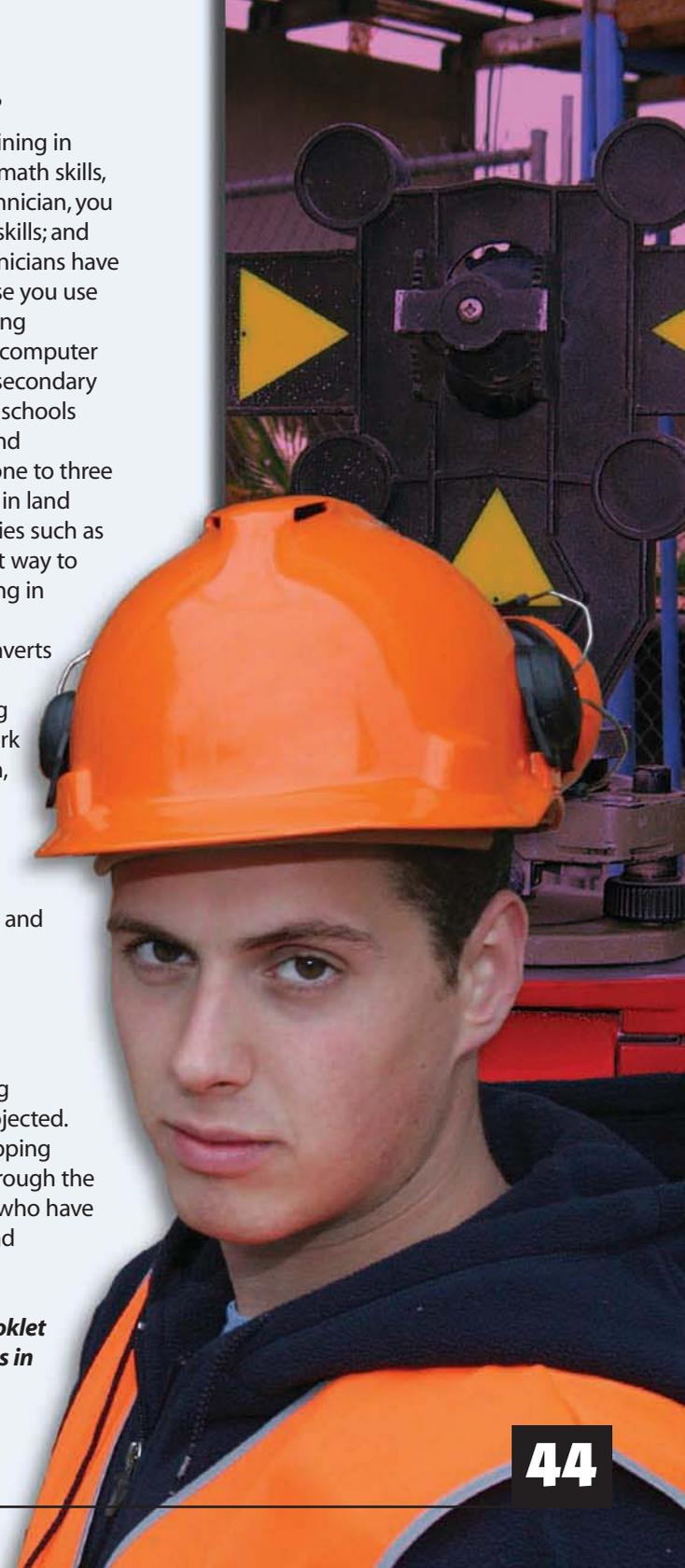
How long does it take to receive training?

To work as a surveying technician, you must have training in surveying, be in good physical condition, have good math skills, and have an eye for detail. To work as a mapping technician, you must have training in drafting, have good computer skills; and have an eye for color and detail. Most mapping technicians have had some specialized postsecondary training. Because you use Geographic Information Systems (GIS), you need strong computer skills and training in drafting, cartography, computer science, or GIS. Surveying technicians also need postsecondary training. Colleges, technical institutes, and vocational schools offer programs in surveying, surveying technology, and engineering technology. These programs take from one to three years to complete. Four-year colleges offer programs in land surveying or engineering. Because of new technologies such as GPS, the longer postsecondary programs are the best way to prepare. High school graduates with no formal training in mapping or geographic information systems start as digitizers. These workers operate equipment that converts map coordinates into computer readable form. High school graduates with no formal training in surveying usually start as apprentices. As an apprentice, you work as a laborer on survey teams. You haul gear, cut brush, and perform other routine tasks. Because of rapid changes in surveying and mapping technology, you spend time each year learning new hardware and software. Military training and experience as a surveyor or mapping technician is good background and can qualify you for jobs at the technician level.

When I'm ready to work, will there be job openings?

The outlook for job openings for survey and mapping technicians is average to 2014. Average growth is projected. Nationally, the number of jobs for surveying and mapping technicians is expected to grow as fast as average through the year 2014. Opportunities will be best for technicians who have formal training in Global Positioning System (GPS) and Geographic Information Systems (GIS).

Please see the Training Programs section of this booklet to find out more about training in these career fields in Alaska.



What's this job all about?

Storage and transportation managers direct the pickup, transport, and storage of goods. Transportation managers work for airlines, trucking companies, railroads, and other shipping organizations. They decide which routes their company will cover. Storage managers coordinate the activities in warehouses. Storage and transportation managers interview, select, and train staff and they supervise the activities of workers. For example, transportation managers supervise workers who dispatch, route, and track vehicles. Storage managers oversee workers who receive, store, and ship products.

Many workers in this industry belong to a union so managers have to make sure their companies follow union rules. For example, managers review transportation schedules to make sure drivers will not be overworked. If you work in this field in Alaska you will most likely work for a large company. Since Alaska is becoming an international transportation hub for shipping, the need for people who can manage and oversee the workers who receive, store and ship products is growing as well. While many managers come into the field with a college degree, you can also work your way up through the job ladder by starting out at entry level positions and learning the field over time. Some people in the field take course work toward a higher degree while they are working their way up.

Here's what Transportation, Storage and Distribution Managers do:

- Develop procedures for workers to follow to accomplish their jobs.
- Consider job duties, government and union rules, and other information when creating these procedures.
- Develop manuals for workers.
- Plan, develop, and apply safety programs.
- When accidents occur, work with the government agencies that inspect them.
- Responsible for their buildings, equipment, and vehicles.
- Inspect vehicles and buildings to make sure they are safe.
- Order repairs, develop plans for warehouse expansions, and purchase new equipment.
- Research equipment and negotiate contracts.
- Analyze financial reports.
- Use the reports to improve services and increase profits.
- Consult with their supervisors to develop new ways of operating.
- Represent their companies at hearings or meetings with government agencies and regulators.
- Bill clients and resolve customer complaints.
- Review invoices, work orders, and demand forecasts to estimate how many workers they will need.
- Schedule the pickup, delivery, or distribution of products or materials.

How much money can I make?

Median wage: \$33.75 per hour

In Alaska, the median wage for storage and transportation managers is \$5,850 per month (\$33.75 per hour). Half of all storage and transportation managers earn between \$4,912 and \$7,292 per month (\$28.34 and \$42.07 per hour). Nationally, the median wage for storage and transportation managers is \$5,760 per month (\$33.23 per hour). Half of all storage and transportation managers earn between \$4,399 and \$7,491 per month (\$25.38 and \$43.22 per hour). Pay varies by the worker's level of experience. New staff are paid less than experienced employees. Storage and transportation managers who work full

HELPFUL HIGH SCHOOL COURSES

If you are interested in this field you should take courses in high school that help you enter college. Here are some of the high school courses that can help prepare you. While you don't have to take all of them, you should consider them in your planning. Some of these classes are also available at colleges and technical schools.

Business

Computer and Information Sciences
Business Computer Applications

English Language and Literature

English and Language Arts (Four years)
English Composition, Technical Writing
Business and Applied English
Public Speaking

Marketing

Marketing
Warehouse Operations
Marketing Management

Mathematics

Pre-Algebra, Algebra
Geometry
Advanced Algebra
Probability and Statistics
Business Math; Advanced Business Math

Social Sciences and History

World Geography, Geography
Economics, Advanced Economics
Consumer Law, Business Law
Social Science
Psychology, Advanced Psychology
Organization Studies

time usually receive benefits. Typical benefits include health insurance, paid vacation, and sick leave. Some also receive a retirement plan.

How long does it take to receive training?

To work as a storage or transportation manager, you must have years of work experience in a related occupation or have a bachelor's degree and experience, be self-confident and persuasive, be able to direct and motivate people, and have strong communication skills. Most storage and transportation managers prepare for this field by earning a bachelor's degree, however many learn through extensive on-the-job experience or training. While education is important to prepare for this occupation, work experience is just as important. Some storage or transportation managers begin in entry-level positions, with only a high school degree or GED. The military is a good source of training for this occupation.

When I'm ready to work, will there be job openings?

In Alaska, the outlook for job openings for storage and transportation managers is good to 2014. Average growth in this field is projected. Nationally, the number of jobs for storage and transportation managers is expected to grow about as fast as average through the year 2014. Growth in this industry closely follows the national economy. When the national economy is doing well, there is an increase in the production and sale of goods. This increases the need for storing and moving goods from suppliers to consumers. When the economy is weak, the demand for these services decreases. Competition is strong in the storage and transportation of goods. The fastest growth for managers will be with courier services, such as UPS and Fed Ex. With more people buying goods over the Internet, more delivery drivers will be needed to deliver these goods. More supervisors will be needed to monitor delivery of these goods. Growth will also be good in the warehousing and storage industry.

Please see the Training Programs section of this booklet to find out more about training in these career fields in Alaska.





Welders

Cutters, Solderers and Brazers

What's this job all about?

Welders and solderers use heat to permanently join pieces of metal. Welding is the most common way to permanently join metal parts. Heat applied to metal pieces melts and fuses them together. Because of its strength, welding is used in the building of ships, automobiles, and aircraft. It is also used to manufacture thousands of other products and to join beams in the construction of buildings, bridges, and other large structures. In Alaska, welders have been in high demand on many of the state's largest construction projects, like the building and upkeep of the Trans-Alaska pipeline.

Soldering and brazing are similar processes that are used on electronic and other small equipment. The work of arc and flame cutters is closely related to that of welders. However, instead of joining metals, cutters use heat to cut and trim metal objects to specific dimensions. Cutters also cut up large objects, such as ships, cars, or aircraft. All of these skills will be in high demand in the construction of a natural gas pipeline in Alaska.

Here's what Welders do:

- Plan work from drawings or detailed work orders, deciding how to repair or join metal parts.
- Interpret blue prints.
- Welders use arc, gas, and flame torches, as well as other types of welding equipment; solderers generally use soldering irons.
- Position and secure the work piece using a hoist or crane to move large pieces or hand tools for smaller pieces.
- Use tools or chemicals to clean surfaces.
- Connect hoses or nozzles, and ignite torches or start a power supply.
- Fuse or weld metal parts together.
- Repair broken or cracked metal parts.
- Examine their work to be sure it meets requirements.

How much money can I make?

Median wage: \$23.22 per hour.

In Alaska, the median wage for welders and solderers is \$4,025 per month (\$23.22 per hour). Half of all welders and solderers earn between \$3,411 and \$4,755 per month (\$19.68 and \$27.43 per hour). Nationally, the median wage for welders and solderers is \$2,583 per month (\$14.90 per hour). Wages vary by employer and by the number of hours worked. Many welders work overtime and earn more. More than one-fourth of welders belong to unions, often earning higher wages than non-union members. Benefits vary by employer. Most full-time welders and solderers earn typical benefits. These include vacation, sick leave, and health insurance. Some employers also provide a retirement plan.

How long does it take to receive training?

To work as a welder, you must have a high school diploma or GED; complete a formal training program; complete on-the-job training; and have a good eye for detail. Most welders learn their skills through a formal training program. High schools

HELPFUL HIGH SCHOOL COURSES

A high school diploma or GED is almost always required to work as a welder. You need courses in English, math, science, and social studies, physical education, health, and applied art or second language. Here is a list of high school courses that will help prepare you:

Construction Trades

Exploration of Construction Careers

Drafting

Drafting, Technical and Mechanical
Blueprint Reading

Health and Safety Education

Safety and First Aid

Industrial and Technology Education

Exploration of Careers
General Industrial Arts
Materials and Processes
Metal and Wood Technology
Industrial Safety and First Aid
Equipment Maintenance and Repair
Industrial and Technology Education Work Experience

Mathematics

General Math
Integrated Math
Pre-Algebra, Algebra
Geometry, Trigonometry

Precision Metalwork

Machining
Metalworking
Sheet Metal
Welding
Precision Metalwork Work Experience

and professional technical schools and colleges all offer welding programs. There are also private welding schools and apprenticeship training programs offered by unions. Training can last as short as a few weeks for low-skilled work or many years to be fully-trained. Apprenticeship training usually consists of three to five years of on-the-job training and each year you receive at least 144 hours of classroom training. Other welders learn their skills on the job from an experienced worker. You begin as a helper and gradually learn to operate welding equipment. Some employers will send you for additional training. The military is also an excellent source of training. In the military, you learn brazing and welding techniques and you may earn credit for work experience when you go into a civilian apprenticeship program.

When I'm ready to work, will there be job openings?

In Alaska, the outlook for job openings for welders and solderers is average to 2014. As long as the economy remains strong, the demand for welders and solderers should remain high. However, if the economy slows, workers in some industries may be laid off or work fewer hours. The increasing use of robots to do tasks will have the most impact on low-skilled manual welders. This is because the jobs that become automated are the simple, repetitive ones. Welders who work on construction projects or in equipment repair are less likely to be affected. This is because their jobs are not as easily automated. Job prospects should be excellent for welders with the right skills. Many employers report difficulty finding qualified applicants. In Alaska, construction, repair and upkeep of oil and gas pipelines puts these skills in high demand.

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