



Career and Technical Training

FOR SKILLED TRADE
OCCUPATIONS IN MICHIGAN

www.mcul.org


MICHIGAN CREDIT UNION LEAGUE & AFFILIATES

An Overview: Careers in Skilled Trade Occupations

Students entering the Michigan job market have numerous career opportunities available that don't require the time and financial investment of a four-year college degree program.

After nearly a decade of job declines in Michigan, many Skilled Trade occupations are in high demand and the trend is expected to continue. However, there is a concern that this demand will be slowed by a shortage of qualified Skilled Trade workers. In Michigan, Skilled Trade occupations are expected to grow by 7.4 percent overall through 2020, with some positions projected to grow much more.

Many skilled trade occupations pay a solid wage and can offer an attractive alternative for people who do not wish to pursue a four-year college degree. Skilled Trade occupations should not be confused with low-skill or easy jobs. While these occupations typically do not require a bachelor's degree, they do require significant skills and training beyond a high school diploma obtained through training programs, on-the-job training or apprenticeship programs.

This guide has been developed to identify key Skilled Trade occupations expected to continue to be in high demand in Michigan and provide information to familiarize students or prospective employees with the job profiles and available training for each position.

The Michigan Industry Cluster Approach

The State of Michigan's Workforce Development Agency has identified five priority clusters that make up the Michigan Industry Cluster Approach in an effort to address the employment challenges that Michigan employers are currently facing. This framework connects similar industries to identify high demand jobs and the skills and training required. This approach is being implemented in partnership with employers, the Michigan Works! System, the Michigan Economic Development Corporation, education and training providers, and statewide trade associations. Skilled Trade occupations make up a significant portion of the Industry Clusters.

The five priority areas of the Michigan Industry Cluster Approach are: Manufacturing, Health Care, Agriculture, Energy and Information Technology. Some of the Skilled Trade occupations in this guide fit within more than one cluster depending on the specific job application of those trades. For instance, Heating, Air Conditioning and Refrigeration Mechanics and Installers are needed in both the Manufacturing and Energy Industry Clusters.

Skilled Trades Occupation Guide

Each occupation description in this guide provides a job summary and shows the current wage range and projected employment growth through 2020. In each profile, education and training requirements are identified and direct links to available training sources in Michigan are provided. Students and prospective employees can gain a fuller understanding of each career position by viewing a short video through links in the guide. These training and video links go to the CareerOneStop website sponsored by the U. S. Department of Labor, Employment and Training Administration.

The Skilled Trade occupations highlighted in this guide have been identified as those with projected high employment growth or high significance in Michigan based upon consultation with the Michigan Workforce Development Agency and the Michigan Bureau of Labor & Market Information and Strategic Initiatives. Information about additional positions in each cluster can be found at www.michigan.gov/WDA

Training Alternatives

While many Skilled Trade occupations do not require a four-year degree, they do require training. [Videos from the CareerOneStop website](#) help familiarize prospective employees to the training options for careers requiring on-the-job training and those requiring a 2-year degree.

Skilled Trade Occupation Job Profiles

The Manufacturing Cluster

Page 4

- Welders
- Computer Numerical Control (CNC) Machine Tool Programmers
- Industrial Machinery Mechanics
- Computer Numerical Control (CNC) Machinist
- Tool and Die Makers

The Health Care Cluster

Page 10

- Nursing Aides, Orderlies and Attendants
- Pharmacy Technicians
- Dental Assistants
- Physical Therapy Assistants
- Home Health Aides

The Agriculture Cluster

Page 16

- Food Batch Makers
- Butchers and Meat Cutters
- Meat Packers
- Tree Trimmers and Pruners
- Landscaping and Groundskeeping Workers

The Energy Cluster

Page 22

- Heating, Ventilation, Air Conditioning and Refrigeration Mechanics
- Plumbers, Pipefitters and Steamfitters
- Electrical Power-Line Installers and Repairers
- Engineering Technicians
- Environmental Engineering Technicians

The Information Technology Cluster

Page 28

- Computer Network Support Specialists
- Computer User Support Specialists
- Computer Programmers
- Database Administrators

The Manufacturing Cluster

Welders

2012 Wage Range	\$ 12.00 - \$ 27.00 per hour \$ 24,000 - \$ 56,000 annually
Entry-Level Education	High School Diploma, post-secondary non-degree award, apprenticeship for higher-skilled levels
Number of Jobs in Michigan, 2010	9,990
Forecasted Employment Growth Through 2020	8%

What Welders Do

Welders use hand-held welding or flame-cutting equipment to weld or join metal parts and to fill holes, indentations or seams of metal products. Some welding jobs are performed manually and some use wire feeders to perform welding tasks.



Position Titles

Welder, Aluminum Welder, Fabrication Welder, Mig Welder, Sub Arc Operator, Maintenance Welder.

Work Environment

Welders may work indoors, often in confined areas or outdoors, sometimes in inclement weather. Occasionally they must lift heavy objects and work in awkward positions. Welding is needed in shipyards, automobile manufacturing, power plants, refineries and bridge construction. Most welders work a 40-hour work week, however, overtime is quite common.

Knowledge, Skills and Abilities

Welders should have a general knowledge of machines and tools and be able to operate a computer. This position requires an ability to see details at close range. Welders should have good arm and hand coordination in order to manipulate and assemble small objects. Welders need to have proficient skills in math and an understanding of the English language.

[Career Video for Welders](#)

Training Links

- Find [colleges, training schools and instructional programs](#) for this occupation.
- Find education and training programs where you can earn a certificate, diploma or award in less than 2 years with the [Short-Term Training Finder](#).

Computer Numerical Control (CNC) Machine Tool Programmers

2012 Wage Range	\$ 15.00 - \$ 33.00 per hour \$ 32,000 - \$ 69,000 annually
Entry-Level Education	High School Diploma, moderate-term on-the-job training with technical education, apprenticeships
Number of Jobs in Michigan, 2010	1,010
Forecasted Employment Growth Through 2020	5%

What CNC Machine Tool Programmers Do

CNC Machine Tool Programmers develop programs to control machining or processing of metal or plastic parts by automatic machine tools, equipment or systems. They determine the sequence of machine operations and select proper cutting tools needed to machine work pieces into desired shapes.

Position Titles

CNC Programmer, Process Engineer, Programmer, Project Engineer, Software Engineer, Welding Engineer, CAD/CAM Programmer.

Work Environment

CNC Machine Tool Programmers perform the majority of their responsibilities in an office environment working with computers and technical drawings. Occasionally they are needed in the shop in order to monitor CNC machining operations.

Knowledge, Skills and Abilities

CNC Machine Tool Programmers should have a working knowledge of mathematics and machines. A basic knowledge of computers and electronics is necessary. This occupation requires good problem solving skills in order to identify design problems and develop alternative design solutions. A CNC Machine Tool Programmer needs to be able to see details at close range and have strong information ordering skills, as well as be able to arrange items in specific orders or patterns.

[Career Video for CNC Machine Tool Programmers](#)

Training Links

- Find [colleges, training schools and instructional programs](#) for this occupation.
- Find education and training programs where you can earn a certificate, diploma or award in less than 2 years with the [Short-Term Training Finder](#).

Industrial Machinery Mechanics

2012 Wage Range	\$ 15.00 - \$ 33.00 per hour \$ 32,000 - \$ 69,000 annually
Entry-Level Education	High School Diploma, long term on-the-job training after employed, apprenticeships
Number of Jobs in Michigan, 2010	10,780
Forecasted Employment Growth Through 2020	18%

What Industrial Machinery Mechanics Do

Industrial Machinery Mechanics repair, install, adjust or maintain industrial production and processing machinery or refinery and pipeline distribution systems. Workers may be required to unload, inspect and set up new machinery. Individuals in this job field may need to work under the direction and advisement of production managers to help determine optimal placement of machinery. Industrial Machinery Mechanics must be able to diagnose and detect mechanical problems and will repair the machinery.

Position Titles

Maintenance Mechanic, Maintenance Technician, Mechanic, Engineering Technician, Master Mechanic, Industrial Machinery Mechanic, Machine Adjuster, Industrial Electrician Mechanic.

Work Environment

Most Industrial Machinery Mechanics work in industrial factory settings. They are often required to work overtime, especially in emergency situations, since disabled equipment is costly to the company. They are required to wear protective equipment including hardhats, safety glasses and safety belts.

Knowledge, Skills and Abilities

An Industrial Machinery Mechanic should have knowledge of mathematics. They should be comfortable with using machinery and tools and have good reaction timing and manual dexterity. Individuals in this field should be familiar with basic engineering technology and be able to perform equipment maintenance and repairs.

Career Video for Industrial Machinery Mechanics

Short-Term Training Links

- Find [colleges, training schools and instructional programs](#) for this occupation.
- Find education and training programs where you can earn a certificate, diploma or award in less than 2 years with the [Short-Term Training Finder](#).

Computer Numerical Control (CNC) Machinist

2012 Wage Range	\$ 10.00 - \$ 24.00 per hour \$ 20,000 - \$ 51,000 annually
Entry-Level Education	High School Diploma, moderate on-the-job training with technical education, apprenticeships
Number of Jobs in Michigan, 2010	8,910
Forecasted Employment Growth Through 2020	14%

What CNC Machinists Do

CNC Machinists operate computer-controlled machines or robots to perform one or more machine functions on metal or plastic work pieces. They transfer commands from the computer server to the CNC control module which is often conversational, meaning it will ask the operators a series of questions regarding the task. The machinist will then position the metal on the CNC machine tool, set controls and let the computer make the designated cuts while constantly monitoring for possible errors.

Position Titles

Computer Numerical Control (CNC) Operator, Quality Control, CNC Machinist, Machine Operator, CNC Lathe Operator, Production Worker, Brake Press Operator.

Work Environment

Individuals in this position work in machine shops which are clean, well lit and ventilated. They must wear protective safety glasses and earplugs. Some machinists work in offices that are close to the shop floor.

Knowledge, Skills and Abilities

Employees in this area should have strong mathematical skills and knowledge of machines, tools, computers and electronics. Customer service skills are very important in this field. Workers should be able to work both independently and as part of a team.

Career Video for CNC Machinists

Short-Term Training Links

- Find [colleges, training schools and instructional programs](#) for this occupation.
- Find education and training programs where you can earn a certificate, diploma or award in less than 2 years with the [Short-Term Training Finder](#).

Tool and Die Makers

2012 Wage Range	\$ 16.00 - \$ 34.00 per hour \$ 34,000 - \$ 72,000 annually
Entry-Level Education	High School Diploma, long-term on-the-job technical education training, apprenticeships
Number of Jobs in Michigan, 2010	10,720
Forecasted Employment Growth Through 2020	-4%, however, many "replacement" openings from retirements are expected

What Tool and Die Makers Do

Tool and Die Makers analyze specifications, lay out metal stock, set up and operate machine tools and fit and assemble parts to make and repair dies, cutting tools, jigs, fixtures, gauges, and machinists' hand tools. Toolmakers craft precision tools used to cut, shape and form metal and other materials. They also produce jigs, fixtures, gauges and other measuring devices. Die makers construct metal forms used to shape metal in stamping and forging operations.

Position Titles

Aircraft Tool Maker, Carbide Tool Die Maker, Die Maker, Jig and Fixture Builder, Tool Repairer, Tool and Die Machinist, Trim Die Maker.

Work Environment

Individuals in this job field usually work in tool rooms which are quiet, clean and cool environments. Workers must wear protective equipment such as safety glasses. Tool and die makers work 40-hour work weeks, however overtime and weekend work is common. Most employers recommend that workers complete apprenticeship training. Most jobs are found in industries manufacturing metalworking machinery and equipment, metal forgings and stampings, motor vehicles, miscellaneous plastics products and aircraft and parts.

Knowledge, Skills and Abilities

Workers in this area should have good mathematical and mechanical skills, and the ability to work with and interpret design techniques and tools. Tool and die makers require a high degree of patience and attention to detail. They also need to be able to solve problems independently.

[Career Video for Tool and Die Makers](#)

Short-Term Training Links

- Find [colleges, training schools and instructional programs](#) for this occupation.
- Find education and training programs where you can earn a certificate, diploma or award in less than 2 years with the [Short-Term Training Finder](#).

Notes About the Manufacturing Cluster

Rate your satisfaction and interest-level about aspects of these type of jobs on a 1 (being low) to 5 (being high) point basis. Then total them up to identify positions which may be most relevant for you to pursue further. Make other notes for yourself, too.

Welders

Wage Range		
Educational Level		
Job Opportunities		
Job Description		
Work Environment		Total
Knowledge, Skills and Abilities		

Computer Numerical Control (CNC) Machine Tool Programmers

Wage Range		
Educational Level		
Job Opportunities		
Job Description		
Work Environment		Total
Knowledge, Skills and Abilities		

Industrial Machinery Mechanics

Wage Range		
Educational Level		
Job Opportunities		
Job Description		
Work Environment		Total
Knowledge, Skills and Abilities		

Computer Numerical Control (CNC) Machinist

Wage Range		
Educational Level		
Job Opportunities		
Job Description		
Work Environment		Total
Knowledge, Skills and Abilities		

Tool and Die Makers

Wage Range		
Educational Level		
Job Opportunities		
Job Description		
Work Environment		Total
Knowledge, Skills and Abilities		

The Health Care Cluster

Nurse Aides, Orderlies and Attendants

2012 Wage Range	\$ 9.00 - \$ 16.00 per hour \$ 20,000 - \$ 34,000 annually
Entry-Level Education	Post-secondary non-degree award
Number of Jobs in Michigan, 2010	1,340
Forecasted Employment Growth Through 2020	14%

What Nurse Aides, Orderlies and Attendants Do

Nurse Aides provide basic medical care for patients including bathing, feeding and treatments. They answer patient calls for nurses, change bed linens, document and report patient behavior and symptoms.



Position Titles

Nurse Aide, Patient Care Technician, Geriatric Aide orderly, Nurse's Assistant.

Work Environment

Individuals in this job field work under the supervision of a Registered Nurse. They work in hospitals, nursing homes and other long-term care facilities. Workers usually have a set schedule of 32-40 hours per week and may be required to work evenings, weekends and holidays. Uniforms must be worn by employees in this job field.

Knowledge, Skills and Abilities

Nurse Aides must be patient, sensitive and healthy. They should have a good command of the English language. They should be able to recognize and solve problems and able to work both individually and as part of a team. Advancement opportunities in this area are limited, however, many Nurse Aides choose to pursue the training and education required to become a licensed practical nurse, registered nurse or medical assistant.

[Career Video for Nurse Aids](#)

Short-Term Training Links

- Find [colleges, training schools and instructional programs](#) for this occupation.
- Find education and training programs where you can earn a certificate, diploma or award in less than 2 years with the [Short-Term Training Finder](#).

Pharmacy Technicians

2012 Wage Range	\$ 9.00 - \$ 18.00 per hour \$ 19,000 - \$ 37,000 annually
Entry-Level Education	High School Diploma, moderate term on-the-job training after employed
Number of Jobs in Michigan, 2010	11,010
Forecasted Employment Growth Through 2020	17%

What Pharmacy Technicians Do

Pharmacy Technicians prepare medications under the supervision of a pharmacist. This may include mixing, counting out medicine, labeling and determining amounts and dosages of medications. Other administrative duties include stocking shelves, answering the phone, performing inventory, processing health insurance forms and handling customer payments.

Position Titles

Certified Pharmacist Technician, Pharmacist Technician, Infusion Pharmacist Technician and Order Processing Technician.

Work Environment

Pharmacy Technicians work in a pharmacy, usually in a store or medical facility. They may also work in a doctor's office, mail-order pharmacy or online pharmaceutical clinics. Workers in this job field can expect to work evenings and weekends. Most of the job is done while standing.

Knowledge, Skills and Abilities

Pharmacy Technicians should have a good knowledge of mathematics, the English language and computers. They should be active listeners, critical thinkers and have strong social perception skills, as well as have awareness of a person's reactions. This job requires precision and attention to detail. Individuals in this field should be able to work both independently and as part of a team. Pharmacist Technicians can be promoted to Certified Pharmacist Technicians after training is completed.

Career Video for Pharmacy Technicians

Short-Term Training Links

- Find [colleges, training schools and instructional programs](#) for this occupation.
- Find education and training programs where you can earn a certificate, diploma or award in less than 2 years with the [Short-Term Training Finder](#).

Dental Assistants

2012 Wage Range	\$ 12.00 - \$ 22.00 per hour \$ 24,000 - \$ 45,000 annually
Entry-Level Education	High School Diploma, Post-secondary non-degree award
Number of Jobs in Michigan, 2010	9,330
Forecasted Employment Growth Through 2020	15%

What Dental Assistants Do

Dental Assistants work under the direction of dentists. They handle and sterilize dental tools, prepare materials and use suction devices to keep a patient's mouth dry. Dental Assistants also take and develop x-rays and give patients dental care instructions.

Position Titles

Dental Assistant, Registered Dental Assistant, Certified Dental Assistant, Orthodontic Assistant, Surgical Dental Assistant, Expanded Dental Assistant.

Work Environment

Dental Assistants work in dental offices, dental clinics or dental school clinics. They wear protective clothing, gloves and masks when working with patients in order to protect themselves and their patients from infection. Many employees in this career field work less than full time.

Knowledge, Skills and Abilities

Dental Assistants should have a good understanding of the English language and understanding of administrative and clerical recordkeeping procedures. They should have good customer service skills and be active listeners.

Career Video for Dental Assistants

Short-Term Training Links

- Find [colleges, training schools and instructional programs](#) for this occupation.
- Find education and training programs where you can earn a certificate, diploma or award in less than 2 years with the [Short-Term Training Finder](#).

Physical Therapist Assistants

2012 Wage Range	\$ 13.00 - \$ 36.00 per hour \$ 27,000 to \$76,000 annually
Entry-Level Education	Associate's Degree
Number of Jobs in Michigan, 2010	2,430
Forecasted Employment Growth Through 2020	29%

What Physical Therapist Assistants Do

Physical Therapist Assistants participate in rehabilitation for accident victims and persons with chronic conditions. Their tasks include applying hot and cold compresses, providing massage therapy and monitoring patient exercise routines.

Position Titles

Physical Therapist Assistant, Physical Therapist Technician, Licensed Physical Therapist Assistant.

Work Environment

Physical Therapist Assistants work directly under a Physical Therapist usually in a hospital or physical therapy facility.

Knowledge, Skills and Abilities

Physical Therapist Assistants should have good organizational skills and strong interpersonal skills. They must be able to provide clear instructions to patients and be able to adapt their actions quickly as needed. Individuals in this career field are able to advance by specializing in specific fields such as geriatrics, pediatrics and sports therapy.

Career Video for Physical Therapist Assistants

Short-Term Training Link

Find [colleges, training schools and instructional programs](#) for this occupation.

Home Health Aides

2012 Wage Range	\$ 8.00 - \$ 14.00 per hour \$ 17,000 - \$ 29,000 annually
Entry-Level Education	Less than high school, short-term on-the-job training after employed
Number of Jobs in Michigan, 2010	35,400
Forecasted Employment Growth Through 2020	53%

What Home Health Aides Do

Home Health Aides usually work under the supervision of a Registered Nurse, Physical Therapist or Social Worker. Their duties include maintaining patient records regarding condition and progress, checking patient's pulse, temperature and respiration, changing bed linens, doing laundry, assisting patients with personal care and supervising patients with prescribed exercises.

Position Titles

Home Health Aide, Certified Nurse Aide, Certified Nursing Assistant, Residential Counselor, Certified Medical Aide, Home Health Provider, Care Giver, Habilitation Training Specialist, Certified Home Health Aide, Patient Care Technician, Residential Assistant.

Work Environment

Home Health Aides work in private homes or residential care facilities. Workers in this field may be required to work nights, weekends and holidays. Some workers in this field elect to work part-time.

Knowledge, Skills and Abilities

Individuals in this career spend a lot of time walking and standing. Home health aides need to have good communication skills and be patient, caring and emotionally stable. Workers in this field should be able to recognize and solve problems and work well as part of a team. Advancement opportunities in this area are limited, however, many workers in this field choose to pursue the training and education required to become a licensed practical nurse, registered nurse or medical assistant.

[Career Video for Home Health Aides](#)

Short-Term Training Links

- Find [colleges, training schools and instructional programs](#) for this occupation.
- Find education and training programs where you can earn a certificate, diploma or award in less than 2 years with the [Short-Term Training Finder](#).

Notes About the Health Care Cluster

Rate your satisfaction and interest-level about aspects of these type of jobs on a 1 (being low) to 5 (being high) point basis. Then total them up to identify positions which may be most relevant for you to pursue further. Make other notes for yourself, too.

Nurse Aides, Orderlies and Attendants

Wage Range		
Educational Level		
Job Opportunities		
Job Description		
Work Environment		Total
Knowledge, Skills and Abilities		

Pharmacy Technicians

Wage Range		
Educational Level		
Job Opportunities		
Job Description		
Work Environment		Total
Knowledge, Skills and Abilities		

Dental Assistants

Wage Range		
Educational Level		
Job Opportunities		
Job Description		
Work Environment		Total
Knowledge, Skills and Abilities		

Physical Therapy Assistants

Wage Range		
Educational Level		
Job Opportunities		
Job Description		
Work Environment		Total
Knowledge, Skills and Abilities		

Home Health Aides

Wage Range		
Educational Level		
Job Opportunities		
Job Description		
Work Environment		Total
Knowledge, Skills and Abilities		

The Agriculture Cluster

Food Batch Makers

<u>2012 Wage Range</u>	\$ 9.00 - \$21.00 per hour \$ 19,000 - \$ 44,000 annually
<u>Entry-Level Education</u>	High School Diploma
<u>Number of Jobs in Michigan, 2010</u>	2,870
<u>Forecasted Employment Growth Through 2020</u>	4%

What Food Batch Makers Do

Food Batch Makers create large batches of food products, usually at food manufacturing facilities. Their activities include setting up, operating and tending equipment that cooks, mixes, blends or processes ingredients in the manufacturing of food products according to formulas or recipes. They blend ingredients using a paddle or agitator or by controlling vats that heat and mix ingredients. Food Batch Makers also clean and sterilize vats and factory processing areas.

Position Titles

Blender, Mixer, Machine Operator, Process Operator, Batching Operator, Processing Operator, Syrup Maker, Brewing Technician, Compounder.

Work Environment

Individuals in this job field work in a clean, dry, well-ventilated factory setting typically in production areas that are specially designed for food preservation or processing. Food batch makers in particular work in kitchen-type, assembly-line production facilities. Because this work involves food, work areas must be sanitary and governmental regulations must be met.

Knowledge, Skills and Abilities

Individuals in this job field need to perform physical activities that require considerable use of your arms and legs and moving your whole body, such as climbing, lifting, balancing, walking, stooping and handling of materials. Food Batch Makers should have knowledge of mathematics and have good reading comprehension. They need an understanding of production processes and be able to quickly and repeatedly adjust the controls of a machine to exact positions.

Short-Term Training Link

Find education and training programs for the related field of "First-Line Supervisors of Food Preparation and Serving Workers" where you can earn a certificate, diploma or award in less than 2 years is available with the [Short-Term Training Finder](#).

Butchers and Meat Cutters

<u>2012 Wage Range</u>	\$ 9.00 - \$ 19.00 per hour \$ 19,000 - \$ 40,000 annually
<u>Entry-Level Education</u>	Less than high school, long term on-the-job training once employed
<u>Number of Jobs in Michigan, 2010</u>	3,340
<u>Forecasted Employment Growth Through 2020</u>	7%

What Butchers and Meat Cutters Do

Butchers and Meat Cutters cut, trim and prepare consumer-sized portions of meat for sale in retail establishments. Their tasks include wrapping, weighing, labeling and pricing cuts of meat. They also receive, inspect and store meat upon delivery to ensure meat quality. Butchers and Meat Cutters may prepare and place meat cuts and products in display counters so that they are appealing to customers.

Position Titles

Meat Cutter, Meat Manager, Meat Specialist, Meat Department Manager, Journeyman Meat Cutter, Market Manager, Butcher, Meat Clerk, Seafood and Service Meat Manager, Meat Wrapper.



Work Environment

Individuals in this career field may work in a retail store or meat processing plant. Butchers and Meat Cutters work in large meat cutting rooms equipped with power machines and conveyors. In small retail markets, they may work in a space behind the meat counter. To prevent viral and bacterial infections, work areas must be kept clean and sanitary.

Knowledge, Skills and Abilities

Butchers and Meat Cutters should have an understanding of production processes. They should also understand the principles and methods for showing and promoting products for sale. Workers in this job should have good manual dexterity and arm-hand steadiness.

Career Video for Butchers and Meat Cutters

Short-Term Training Links

- Find [colleges, training schools and instructional programs](#) for this occupation.
- Find education and training programs where you can earn a certificate, diploma or award in less than 2 years with the [Short-Term Training Finder](#).

Meat Packers

2012 Wage Range	\$ 9.00 - \$19.00 per hour \$ 19,000 - \$ 39,000 annually
Entry-Level Education	Less than high school, moderate-term on-the-job training once employed
Number of Jobs in Michigan, 2010	630
Forecasted Employment Growth Through 2020	9%

What Meat Packers Do

Meat Packers work in slaughtering, meat packing or wholesale establishments performing precision functions involving the preparation of meat. Work may include specialized slaughtering tasks, cutting standard or premium cuts of meat for marketing, making sausage or wrapping meats.

Position Titles

Meat Cutter, Meat Trimmer, Meat Packer, Meat Packager, Production Worker, Trimmer.

Work Environment

Individuals working in this field work in retail food stores or meat processing plants.

Knowledge, Skills and Abilities

Meat Packers should have manual dexterity and the strength needed to use muscle force to lift, push, pull or carry objects. This position requires the knowledge of raw material production processes, quality control, costs and techniques for maximizing the effective manufacture and distribution of goods. Employees in this field should have knowledge of machines and tools, including their designs, uses, repair and maintenance.

Short-Term Training Links

- Find [colleges, training schools and instructional programs](#) for this occupation.
- Find education and training programs where you can earn a certificate, diploma or award in less than 2 years with the [Short-Term Training Finder](#).

Tree Trimmers and Pruners

<u>2012 Wage Range</u>	\$ 12.00 - \$ 23.00 per hour \$ 25,000 - \$ 48,000 annually
<u>Entry-Level Education</u>	High School Diploma, short-term on-the-job training once employed
<u>Number of Jobs in Michigan, 2010</u>	1,570
<u>Forecasted Employment Growth Through 2020</u>	18%

What Tree Trimmers and Pruners Do

Tree Trimmers and Pruners use sophisticated climbing and rigging techniques to trim or prune trees, cut away dead or excess branches from trees or shrubs to maintain right-of-way for roads, sidewalks or utilities or to improve appearance, health and value of tree. They prune or treat trees or shrubs using handsaws, hand pruners, clippers and power pruners. Tree Trimmers may use truck-mounted lifts to work off the ground in the tree canopy.

Position Titles

Arborist, Tree Trimmer, Tree Climber, Ground Worker, Line Clearance Foreman, Plant Health Care Technician, Groundsman, Tree Care Foreman.

Work Environment

Individuals working in this field work outdoors often exposed to inclement weather conditions. Tree Trimmers and Pruners work at heights on aerial equipment and ladders and are exposed to machinery noise.

Knowledge, Skills and Abilities

Tree Trimmers and Pruners need to have an understanding of machinery and tools including their designs, uses, repair and maintenance. They should be able to think critically and have good reaction time. Good manual dexterity and arm-hand coordination is required for employees in this career field.

Career Video for Tree Trimmers and Pruners

Short-Term Training Link

Find information on education and training programs for the related field of “First-Line Supervisors of Landscaping, Lawn Service and Groundskeeping Workers” where you can earn a certificate, diploma or award in less than 2 years is available with the [Short-Term Training Finder](#).

Landscaping and Groundskeeping Workers

<u>2012 Wage Range</u>	\$ 8.00 - \$ 19.00 per hour \$ 17,000 - \$ 39,000 annually
<u>Entry-Level Education</u>	High School or less
<u>Number of Jobs in Michigan, 2010</u>	28,350
<u>Forecasted Employment Growth Through 2020</u>	21%

What Landscaping and Groundskeepers Do

Landscaping and Groundskeeping Workers maintain grounds of property using hand or power tools and equipment. Workers typically perform a variety of tasks, which may include sod laying, mowing, trimming, planting, watering, fertilizing, digging, raking, sprinkler installation and installation of mortar-less segmental concrete masonry wall units. Landscaping workers create new functional outdoor areas and upgrade existing landscapes while Groundskeepers usually focus on maintaining existing grounds. They both may work on athletic fields, golf courses, cemeteries, college campuses and parks.

Position Titles

Groundskeeper, Groundsman, Outside Maintenance Worker, Gardener, Greenskeeper, Grounds Worker, Grounds/Maintenance Specialist, Utility Worker, Grounds Maintenance Worker, Grounds Supervisor.

Work Environment

Most of the work for these positions is performed outdoors in all kinds of weather. Spring, summer and fall are the busiest months. These jobs can be physically demanding and the work often involves a lot of bending and lifting.

Knowledge, Skills and Abilities

Individuals in this job field need an understanding of machinery and tools. They should have good manual dexterity, arm-hand steadiness and coordination. Employees in these positions have the opportunity to advance to crew leaders or other supervisory positions.

Career Video for Landscaping and Groundskeeping Workers

Short-Term Training Link

Find information on education and training programs for the related field of “First-Line Supervisors of Landscaping, Lawn Service and Groundskeeping Workers” where you can earn a certificate, diploma or award in less than 2 years is available at the [Short-Term Training Finder](#).

Notes About the Agriculture Cluster

Rate your satisfaction and interest-level about aspects of these type of jobs on a 1 (being low) to 5 (being high) point basis. Then total them up to identify positions which may be most relevant for you to pursue further. Make other notes for yourself, too.

Food Batch Makers

Wage Range		
Educational Level		
Job Opportunities		
Job Description		
Work Environment		Total
Knowledge, Skills and Abilities		

Butchers and Meat Cutters

Wage Range		
Educational Level		
Job Opportunities		
Job Description		
Work Environment		Total
Knowledge, Skills and Abilities		

Meat Packers

Wage Range		
Educational Level		
Job Opportunities		
Job Description		
Work Environment		Total
Knowledge, Skills and Abilities		

Tree Trimmers and Pruners

Wage Range		
Educational Level		
Job Opportunities		
Job Description		
Work Environment		Total
Knowledge, Skills and Abilities		

Landscaping and Groundskeeping Workers

Wage Range		
Educational Level		
Job Opportunities		
Job Description		
Work Environment		Total
Knowledge, Skills and Abilities		

The Energy Cluster

Heating, Ventilation, Air Conditioning and Refrigeration Mechanics

<u>2012 Wage Range</u>	\$ 14.00 - \$ 34.00 per hour \$ 29,000 - \$ 70,000 annually
<u>Entry-Level Education</u>	High School Diploma, post-secondary non-degree award
<u>Number of Jobs in Michigan, 2010</u>	6,220
<u>Forecasted Employment Growth Through 2020</u>	19%

What Heating, Ventilation, Air Conditioning and Refrigeration (HVAC) Mechanics Do

Heating, Ventilation, Air Conditioning and Refrigeration Mechanics install and/or maintain mechanical, electrical and electronic components that comprise an HVAC system. HVAC Mechanics need to be able to maintain, diagnose and correct occurring problems systems.

Position Titles

Service Technician; Heating, Ventilation, Air Conditioning Service Technician (HVAC Service Technician); Heating, Ventilation, Air Conditioning Installer (HVAC Installer); Heating, Ventilation and Air Conditioning Specialist (HVAC Specialist); Air Conditioning Technician (AC Tech); Heating, Ventilation, Air Conditioning Mechanic (HVAC Mechanic); Heating, Ventilation and Air Conditioning Installer (HVAC Installer).

Work Environment

HVAC Mechanics mainly work in homes, businesses, factories or any place with climate control equipment. Most mechanics work a 40-hour work week, however, during peak seasons they may have to work irregular hours or be on call.

Knowledge, Skills and Abilities

Employees in this area should have good mathematical skills and knowledge of machines and tools. Customer service skills are also very important in this field. An HVAC Mechanic will perform routine equipment maintenance and be able to install equipment and machinery. Good visualization skills and arm-hand steadiness are desirable in this profession.

Career Video for HVAC Mechanics

Short-Term Training Links

- Find [colleges, training schools and instructional programs](#) for this occupation.
- Find education and training programs where you can earn a certificate, diploma or award in less than 2 years with the [Short-Term Training Finder](#).

Plumbers, Pipefitters and Steamfitters

<u>2012 Wage Range</u>	\$ 13.00 - \$ 36.00 per hour \$ 28,000 - \$ 75,000 annually
<u>Entry-Level Education</u>	High School Diploma, on-the-job training may include apprenticeships
<u>Number of Jobs in Michigan, 2010</u>	10,700
<u>Forecasted Employment Growth Through 2020</u>	9%

What Plumbers, Pipefitters and Steamfitters Do

Plumbers, Pipefitters and Steamfitters are used in power generation & distribution, construction and manufacturing areas. They assemble, install, alter and repair pipelines or pipe systems that carry water, steam, air or other liquids or gases. This may include the installation of heating and cooling equipment and mechanical control systems.

Position Titles

Plumbers, Pipefitters and Steamfitters.

Work Environment

Plumbers, Pipefitters and Steamfitters mainly work indoors. This may be in homes, businesses or industrial environments.

Knowledge, Skills and Abilities

Workers in this area should have good mathematical and mechanical skills. They should have the ability to work with and interpret design techniques and tools. Plumbers, Pipefitters and Steamfitters should be able to evaluate and solve problems and be able to conduct tests and inspections of products and services.



Short-Term Training Links

- Find [colleges, training schools and instructional programs](#) for this occupation.
- Find education and training programs where you can earn a certificate, diploma or award in less than 2 years with the [Short-Term Training Finder](#).

Electrical Power-Line Installers and Repairers

2012 Wage Range	\$ 21.00 - \$39.00 per hour \$ 44,000 - \$ 80,000 annually
Entry-Level Education	High School Diploma, long-term on-the-job training including apprenticeships
Number of Jobs in Michigan, 2010	2,470
Forecasted Employment Growth Through 2020	5%

What Electrical Power-Line Installers and Repairers Do

Electrical Power-Line Installers and Repairers install, repair or maintain cables or wires used in electrical power or distribution systems. They may climb poles or use truck mounted buckets to access equipment. It is sometimes necessary to construct transmission towers and erect power poles in these positions.

Position Titles

Electrical Line Worker, Power Lineman, Line Erector Lineman.

Work Environment

Individuals in this job field work outdoors sometimes in inclement weather. They travel by truck, airplane and helicopter to inspect power lines. Employees work regular hours when installing new lines or performing regular maintenance, however, they may need to work irregular hours and overtime in emergency situations.

Knowledge, Skills and Abilities

Electrical Power-Line Installers and Repairers should have knowledge of mathematics and be able to read and comprehend instructions. They need to have an understanding of machinery and tools, have good arm-hand steadiness and the ability to sense problems. Employers prefer individuals in this area that will pursue a certificate or continued education in the area of electrical utilities.

Career Video for Electrical Power-Line Installers and Repairers

Short-Term Training Links

- Find [colleges, training schools and instructional programs](#) for this occupation.
- Find education and training programs where you can earn a certificate, diploma or award in less than 2 years with the [Short-Term Training Finder](#).

Engineering Technicians

2012 Wage Range	\$ 14.41 - \$ 43.54 per hour \$ 30,000 - \$78,700 annually
Entry-Level Education	Associate's Degree
Number of Jobs in Michigan, 2010	3,660
Forecasted Employment Growth Through 2020	6%

What Engineering Technicians Do

Engineering Technicians solve technical problems in a variety of ways. Some help engineers and scientists do research and development where they may perform experiments, collect data and calculate results. Individuals in this area might also help to make a model of new equipment or build or set up equipment. Some technicians work in quality control where they check products, do tests and collect data.

Position Titles

Electrical and Electronic Engineering Technician, Electrical Engineering Technologist, Electromechanical Engineering Technologist, Electronics Engineering Technologist, Fuel Cell Technician, Industrial Engineering Technologist, Manufacturing Engineering Technologist, Manufacturing Production Technician, Mechanical Engineering Technologist, Nanotechnology Engineering Technician, Nanotechnology Engineering Technologist, Non-Destructive Testing Specialist, Photonics Technician.

Work Environment

Engineering Technicians work in labs, offices, factories or on construction sites and may be exposed to dangerous materials.

Knowledge, Skills and Abilities

Persons in this job field must possess knowledge of engineering science and technology. This includes applying principles, techniques, procedures and equipment to the design and production of various goods and services. Good critical thinking skills and the ability to communicate information and ideas in writing is important in this field. Continued training is recommended for this job since technology evolves at a fast pace.

[Career Video for Electrical and Electronic Engineering Technicians](#)

Short-Term Training Links

- Find [colleges, training schools and instructional programs](#) for this occupation.
- Find education and training programs where you can earn a certificate, diploma or award in less than 2 years with the [Short-Term Training Finder](#).

Environmental Engineering Technicians

2012 Wage Range	\$ 13.00 - \$ 30.00 per hour \$ 27,000 - \$ 62,000 annually
Entry-Level Education	Associate's Degree
Number of Jobs in Michigan, 2010	570
Forecasted Employment Growth Through 2020	16%

What Environmental Engineering Technicians Do

Environmental Engineering Technicians work under the supervision of engineering staff to test and operate equipment used in the prevention, control and remediation of environmental problems. They also assist scientists and engineers in areas of research and development.

Position Titles

Environmental Engineering Technician, Environmental Specialist, Industrial Waste Inspector, Engineering Technician, Environmental Engineering Assistant, Environmental Field Technician, Industrial Waste Technician.

Work Environment

Individuals working in this field work outdoors to collect samples for observation. They also perform job responsibilities indoors such as recordkeeping and testing engineering projects.

Knowledge, Skills and Abilities

Environmental Engineering Technicians should have knowledge of mathematics and chemistry. They need to have an understanding of engineering science and technology. Individuals performing this job should have strong deductive and inductive reasoning skills. Employees can advance to supervisory positions with experience and training.

Career Video for Environmental Engineer Technicians

Short-Term Training Links

- Find [colleges, training schools and instructional programs](#) for this occupation.
- Find education and training programs where you can earn a certificate, diploma or award in less than 2 years with the [Short-Term Training Finder](#).

Notes About the Energy Cluster

Rate your satisfaction and interest-level about aspects of these type of jobs on a 1 (being low) to 5 (being high) point basis. Then total them up to identify positions which may be most relevant for you to pursue further. Make other notes for yourself, too.

Heating, Ventilation, Air Conditioning and Refrigeration Mechanics

Wage Range		
Educational Level		
Job Opportunities		
Job Description		
Work Environment		Total
Knowledge, Skills and Abilities		

Plumbers, Pipefitters and Steamfitters

Wage Range		
Educational Level		
Job Opportunities		
Job Description		
Work Environment		Total
Knowledge, Skills and Abilities		

Electrical Power-Line Installers and Repairers

Wage Range		
Educational Level		
Job Opportunities		
Job Description		
Work Environment		Total
Knowledge, Skills and Abilities		

Engineering Technicians

Wage Range		
Educational Level		
Job Opportunities		
Job Description		
Work Environment		Total
Knowledge, Skills and Abilities		

Environmental Engineering Technicians

Wage Range		
Educational Level		
Job Opportunities		
Job Description		
Work Environment		Total
Knowledge, Skills and Abilities		

The Information Technology Cluster

Computer Network Support Specialists

2012 Wage Range	\$ 17.00 - \$ 37.00 per hour \$ 35,000 - \$ 77,000 annually
Entry-Level Education	Some college, no degree
Number of Jobs in Michigan, 2010	18,110
Forecasted Employment Growth Through 2020	15%

What Computer Network Support Specialists Do

Computer Network Support Specialists analyze, test, troubleshoot and evaluate existing network systems such as local area and wide area network systems. They perform network maintenance to ensure networks operate correctly with minimal interruption. Computer Network Support Specialists respond to customer service calls and may also be involved in the training of users of new equipment.

Position Titles

Computer Network Support Specialists.

Work Environment

Individuals in this career field usually work in comfortable office settings.

Knowledge, Skills and Abilities

Individuals in this job field should have good mathematics and computer skills. They should have strong customer service skills and be good trouble shooters. Since the area of computer technology is constantly changing, individuals wanting to advance in this field will need to participate in frequent training in order to enhance their skills.



Short-Term Training Links

- Find [colleges, training schools and instructional programs](#) for this occupation.
- Find education and training programs where you can earn a certificate, diploma or award in less than 2 years with the [Short-Term Training Finder](#).

Computer User Support Specialists

2012 Wage Range	\$ 13.00 - \$ 35.00 per hour \$ 26,000 - \$ 73,000 annually
Entry-Level Education	Some college, no degree
Number of Jobs in Michigan, 2010	18,110
Forecasted Employment Growth Through 2020	15%

What Computer User Support Specialists Do

Computer User Support Specialists provide technical assistance to computer users by answering questions or resolving computer problems via telephone or electronically.

Position Titles

Computer User Support Specialist, Technical Support Specialist, Help-Desk Technician.

Work Environment

Computer User Support Specialists work indoors, usually in an office setting.

Knowledge, Skills and Abilities

Persons in this job field must possess knowledge of computers and electronic equipment. They should have good critical thinking skills and the ability to communicate information and ideas verbally and in writing. Continued training is recommended for this job since technology evolves at a fast pace.

[Career Video for Computer User Support Specialist](#)

Short-Term Training Links

- Find [colleges, training schools and instructional programs](#) for this occupation.
- Find education and training programs where you can earn a certificate, diploma or award in less than 2 years with the [Short-Term Training Finder](#).

Computer Programmers

2012 Wage Range	\$ 20.00 - \$ 47.00 per hour \$ 40,000 - \$98,000 annually
Entry-Level Education	Associate's Degree or Bachelor's Degree
Number of Jobs in Michigan, 2010	10,570
Forecasted Employment Growth Through 2020	8%

What Computer Programmers Do

Computer Programmers write code to create software programs. They turn the program designs created by software developers and engineers into instructions that a computer can follow. Programmers must debug the programs, that is, test them to ensure that they produce the expected results. If a program does not work correctly, they check the code for mistakes and correct them.

Position Titles

Programmer Analyst, Programmer, Analyst Programmer, Computer Programmer, Software Developer, Applications Developer, Computer Programmer Analyst, Internet Programmer, Java Developer, Web Programmer.

Work Environment

Computer Programmers usually work in offices, most commonly in the computer systems design and related services industry and information service industry.

Knowledge, Skills and Abilities

Persons in this job field must possess knowledge of computers and electronic equipment. They should have good critical thinking skills and the ability to communicate information and ideas in writing. Most programmers specialize in a few programming languages. Continued training is recommended for this job since technology evolves at a fast pace.

Career Video for Computer Programmers

Short-Term Training Links

- Find [colleges, training schools and instructional programs](#) for this occupation.
- Find education and training programs where you can earn a certificate, diploma or award in less than 2 years with the [Short-Term Training Finder](#).

Database Administrators

2012 Wage Range	\$ 20.00 - \$ 50.00 per hour \$ 40,000 - \$105,000 annually
Entry-Level Education	Associate's Degree or Bachelor's Degree
Number of Jobs in Michigan, 2010	2,480
Forecasted Employment Growth Through 2020	25%

What Database Administrators Do

Database Administrators administer, test and implement computer databases, applying knowledge of database management systems. They coordinate changes to computer databases and may also plan, coordinate and implement security measures to safeguard computer databases.

Position Titles

Database Administrator (DBA), Database Analyst, Database Administration Manager, Database Coordinator, Database Programmer, Information Systems Manager, Management Information Systems Director (MIS Director), Programmer Analyst, Systems Manager.

Work Environment

Database Administrators work in many different types of industries, including computer systems design and related services firms, insurance companies, banks and hospitals.

Knowledge, Skills and Abilities

Persons in this job field must possess knowledge of computers and electronic equipment. They should have good critical thinking skills and the ability to communicate information and ideas in writing. Continued training is recommended for this job since technology evolves at a fast pace.

[Career Video for Database Administrator](#)

Short-Term Training Links

- Find [colleges, training schools and instructional programs](#) for this occupation.
- Find education and training programs where you can earn a certificate, diploma or award in less than 2 years with the [Short-Term Training Finder](#).

Notes About the Information Technology Cluster

Rate your satisfaction and interest-level about aspects of these type of jobs on a 1 (being low) to 5 (being high) point basis. Then total them up to identify positions which may be most relevant for you to pursue further. Make other notes for yourself, too.

Computer Network Support Specialists

Wage Range		
Educational Level		
Job Opportunities		
Job Description		
Work Environment		Total
Knowledge, Skills and Abilities		

Computer User Support Specialists

Wage Range		
Educational Level		
Job Opportunities		
Job Description		
Work Environment		Total
Knowledge, Skills and Abilities		

Computer Programmers

Wage Range		
Educational Level		
Job Opportunities		
Job Description		
Work Environment		Total
Knowledge, Skills and Abilities		

Database Administrators

Wage Range		
Educational Level		
Job Opportunities		
Job Description		
Work Environment		Total
Knowledge, Skills and Abilities		

Thrive in Michigan with a Great Career!

Choosing a career that pays a solid wage and offers stability is an important financial decision. Keeping jobs in Michigan filled by Michigan residents helps both businesses and individuals thrive financially.

Michigan credit unions strive to help their members and their communities thrive financially through helpful products and services and community financial education outreach. For more information about credit unions, visit the CULinkMichigan website at www.culinkmichigan.com.

For more information on Skilled Trade jobs in Michigan, visit the Michigan Workforce Development Agency at www.michigan.gov/WDA.