



THE 16 CAREER CLUSTERS



“Career Clusters contain occupations in the same field of work that require similar skills.”



CAREER CLUSTER I

Agriculture, Food and Natural Resources

Do you enjoy working with animals? Are you interested in protecting the environment?

Agriculture, food, and natural resources workers produce agricultural goods. This includes food, plants, animals, fabrics, wood, and crops. You might work on a farm, ranch, dairy, orchard, greenhouse, or plant nursery. You could also work in a clinic or laboratory as a scientist or engineer.

Some agriculture, food, and natural resources workers market, sell, or finance agricultural goods. For example, you might market products made from plants and animals. Or, you might sell services that farmers and ranchers use to improve products. You could also work to conserve natural resources or protect the environment.

INTERESTS

- Enjoy working outdoors and being physically active
- Enjoy nature
- Taking care of pets
- Care about protecting the environment
- Start a recycling project
- Raise flowers and vegetables to sell at a farmers' market
- Volunteer at a local animal shelter
- Work on a farm or ranch
- Job shadow at a greenhouse



CAREERS

- Forest Fire Fighter
- Biochemists and Biophysicists
- Food Inspectors and Scientists
- Cartographers
- Game Warden and Animal Breeders
- Farm Workers and Laborers
- Agricultural Inspectors
- Commercial Divers

SUGGESTED HIGH SCHOOL COURSES

- Earth Science
- Biology
- Chemistry
- CAD
- Natural Resources
- Statistics
- Math

Pathways in Agriculture, Food, and Natural Resources

Agribusiness Systems

Occupations involved in the coordination of all activities that contribute to the production, processing, marketing, distribution, financing and development of agricultural commodities, plant and animal products, and other natural resources.

Animal Systems

Occupations related to the raising and caring of animals and developing more efficient ways of producing and processing meat, poultry, eggs and dairy products. Workers study genetics, nutrition, reproduction, growth and care of domesticated farm animals. Includes workers who provide medical service to farm and nonfarm animals.

Environmental Service Systems

Occupations involved in water and air pollution control, recycling, waste disposal and public health issues. Work includes hazardous-waste management, research, and quality control.

Food Products and Processing Systems

Occupations involved in bulk food production, the discovery of new food sources, the analysis of food content, and the development of ways to process, preserve, package or store food according to consumer needs, and. Includes those who monitor compliance with industry and government regulations.

Natural Resources Systems

Occupations that develop, use, maintain, manage, and analyze natural resources. Includes catching and trapping various types of marine life. Work might relate to recreation, wildlife, conservation, mining, logging, or oil drilling.

Plant Systems

Occupations related to growing food, feed, and fiber crops, and the study of plants and their growth to help producers meet consumer demand while conserving natural resources and maintaining the environment. Work might include nutritional analysis or genetic engineering.

Power, Structural and Technical Systems

Workers apply knowledge of engineering, hydraulics, pneumatics, electronics, power, structures, and controls to the field of agriculture. They design agricultural structures as well as machinery and equipment.

CAREER CLUSTER 2

Architecture and Construction

Would you like to get paid to build the things people use everyday?

Architecture and construction workers work on buildings and other structures. This includes highways, bridges, houses, and buildings. You might create the designs or plans for new structures. Or, you might use the plans to build it or manage the workers on the project.

Some architecture and construction workers work in skilled trades, like carpentry, painting, or plumbing. For example, you might do all of the electrical work for a renovated office space. Or, you might work as a landscaper and take care of flowers and trees on large properties.



INTERESTS

- Enjoy working with their hands, using tools
- Have an aptitude for math and science
- Like solving or analyzing problems
- Building homes or other structures
- Building bridges and roadways
- Math Club
- Start a lawn mowing service.
- Do repair and home improvement projects.
- Job shadow at an architecture or home design firm.
- Volunteer to care for flowers at a park or community center.

CAREERS

- Architect
- Brick Mason or Cement Mason
- Electrician or Plumber
- Carpenter
- Structural Steel Workers
- Construction Inspector
- Elevator Installer/Repairer
- Roofer
- Cartographers and Photogrammetrists
- Cement Masons and Concrete Finishers
- Civil Engineering Technicians

SUGGESTED HIGH SCHOOL COURSES

- Algebra, Geometry
- Construction, Construction Materials
- CAD, Computer Courses
- Mechanical Drawing, Blueprint reading
- Electricity and Electronics
- Business Management
- Science

Pathways in Architecture and Construction

Construction

Workers who build and remodel homes, or community, recreational, industrial and office facilities. Includes builders of highways, streets, bridges, tunnels and airports.

Design and Pre-Construction

Occupations related to the management and planning of building and construction project process and resources.

Maintenance and Operations

Occupations that unload, inspect, install and repair equipment and machinery. Work includes maintenance of buildings and the operation of refineries, power plants, chemical plants, and mills.

CAREER CLUSTER 3

Arts, A/V Technology and Communications

Do you like to perform in front of an audience? Are you a visual person or like to work with productions and technology?

Arts, audio/video technology, and communications workers use creativity and their talents on the job. You might work for an audience as a performer or artist.

This includes painters, dancers, sculptors, actors, and singers. Or, you might work behind the scenes to make a performance successful. This includes set designers, editors, broadcast technicians, and camera operators.

Some audio/video technology and communications workers have high-profile jobs. For example, you might work as a news reporter or fashion designer. Or, you might use your creative talents with technology and work as an animator, graphic designer, or film editor.



INTERESTS

- Drawing pictures or cartoons to amuse people
- Performing music, drama and or dance
- Creating an original video or film
- Sketching or painting pictures
- Taking photographs
- Making jewelry, sculpture or ceramics

CAREERS

- Graphic Artist
- Art , Theatre or Music Teacher
- Newspaper Reporter
- Photojournalist
- Author or Writer or Director
- Musician
- Agents of Artists, Performers, and Athletes
- Commercial and Industrial Designers
- Desktop Publishers

SUGGESTED HIGH SCHOOL COURSES

- Art, Graphic Art
- Humanities
- Journalism
- English
- Photography
- Communications
- Music
- Political Science

Pathways in Arts, A/V Technology, and Communications

Audio and Video Technology and Film

Occupations that manufacture, sell, rent, design, install, integrate, operate, and repair the equipment of audio-visual communications. Includes the presentation of sound, video and data in such venues as offices, convention centers, classrooms, theme parks and stadiums. Also includes workers who edit film and video.

Journalism and Broadcasting

Workers who research, write or produce news stories or broadcasts, or present commentaries. Workers also include those involved in publishing and writing. Includes occupations that install, repair and operate digital or electronic equipment used to record and transmit radio or television programs and motion pictures.

Performing Arts

Occupations involved in the creation, development and production of theatrical and musical performances. Includes workers at practice halls, studios and performance venues.

Printing Technology

Occupations involved in prepress, press and binding, or post-press processes. Workers might transform text and pictures for printing plates, or use digital technology for graphics, layout or printing. Includes operating and maintaining equipment or computers used in printing process.

Telecommunications

Occupations involved in the interaction between computer and communications equipment. Includes workers who install or repair data, graphics, video and digital equipment.

Visual Arts

Occupations involved in artistic creation through painting, sculpting, illustrating, fashion, or floral design, and the use of an assortment of materials, including oils, watercolors, acrylics, pastels, pencils, pen and ink, photography, plaster, clay, textiles, plants, and computers.

CAREER CLUSTER 4

Business, Management and Administration

Do you enjoy working with other people? Do you like to plan and organize activities?

Business, management, and administrative workers give the support needed to make a business run.

You might check employee time records or train new employees. Or, you might work as a top executive and provide the overall direction for a company or department.



INTERESTS

- Running your own business
- Lead a volunteer community group.
- Captain a sports team.
- Help manage a fundraiser.
- Join a committee to plan an event.
- Read business newspapers, magazines, or blogs for current economic trends and business practices.
- Job shadow a local business person.
- Volunteer in the business office of a nonprofit agency
- Organizing a school event or fund-raiser
- Managing tasks for a group

CAREERS

- Accountant or CPA
- Database Administrators
- Market Research Analysts
- Public Relations Specialist
- Wind Training Specialist
- Cost Estimators
- Court Reporters
- Energy Auditors
- Advertising and Promotions Manager
- Wind Energy Operations and Project Manager

SUGGESTED HIGH SCHOOL COURSES

- Economics, Business, Accounting, Marketing
- Keyboarding, Computers, Desktop and Multimedia
- Math, English

Pathways in Business, Management, and Administration

Administrative Support

Occupations that facilitate business operations through a variety of administrative and clerical duties including information and communication management, data processing and collection, and project tracking.

Business Information Management

Occupations that provide a bridge between business processes or initiatives and information technology processes. Employees in this area help to align business and IT goals.

General Management

Occupations that plan, organize, direct, and evaluate all or part of a business organization through the allocation and use of financial, human, and material resources.

Human Resources Management

Workers who focus on staffing activities that involve planning, recruitment, selection, orientation, training, performance appraisal, compensation, and safety of an organization's employees.

Operations Management

Workers who focus on planning, organizing, coordinating, and controlling the resources needed to produce or provide a business' goods and/or services. Includes quality control, scheduling, procurement, and warehousing.

CAREER CLUSTER 5

Education and Training

Would you like to get paid to help others learn new things?

Education and training workers guide and train people. As a teacher, you could influence young lives. You could also support the work of a classroom teacher as a counselor, librarian, or principal. You could coach sports activities or lead community classes.

You could also work with adults. For example, you could lead training to employees in a business. Or you could work as a university or college professor for undergraduate or graduate students.



INTERESTS

- Working at a summer camp
- Help others draw, write or read
- Create crafts, art or bulletin boards
- Play games with spelling, reading or math
- Work as a library aid.
- Tutor a family member or neighbor.
- Coach a local sports team.
- Volunteer at a literacy program.
- Work as a teacher assistant in an elementary or high school.
- Become a part of organizations such as Teammates or Big Brothers/Big Sisters.

CAREERS

- School Counselor or School Psychologist
- Teacher or Teacher's Aide
- College Advisor
- Day Care Center Director
- Librarian
- Vice Principal or Principal
- Adapted Physical Education Specialists
- Fitness and Wellness Coordinators

SUGGESTED HIGH SCHOOL COURSES

- English
- Math
- Science
- History
- Sociology, Psychology, Human Development

Pathways in Education and Training

Administration and Administrative Support

Workers who provide direction, leadership, and day-to-day management and support of educational activities in schools, preschools, child care centers, colleges, universities, businesses and industries, correctional institutions, museums, and job training and community service organizations.

Professional Support Services

Occupations that assist people involved in education and training systems with personal and family needs, mental health assistance, educational goals, and career decision making.

Teaching and Training

Occupations that lead or assist in the delivery of instructional materials or lessons in classrooms, workshops, or via online and distance technology. Includes individual and group instruction of children, adults, and professionals.

CAREER CLUSTER 6

FINANCE

Are you good at math? Do you like to work with numbers?

Finance workers keep track of money. You might work in financial planning, banking, or insurance.

For example, you might provide financial services to a business or individual. Or, you could maintain financial records or give advice to business executives on how to operate their business.



INTERESTS

- Investing money
- Developing a budget
- Using spreadsheets and financial computer programs
- Balancing a checkbook
- Being a treasurer of a club
- Organizing a fund-raiser
- Planning a mock stock market game
- Studying investments and the stock market

CAREERS

- Actuary
- Auto Damage Insurance Appraisers
- Energy Brokers
- Financial Institution Manager (Banker)
- Fraud Examiners and Investigators
- Loan Officer
- Proofreaders and Copy Markers
- Risk Management Specialists
- Title Examiners and Searchers
- Tax Preparer or Auditor

SUGGESTED HIGH SCHOOL COURSES

- Business Math, Statistics, Algebra
- Economics, Business Law, Accounting
- English, Marketing
- Computers, Keyboarding

Pathways in Finance

Accounting

Occupations that record, classify, summarize, analyze, and communicate a business' financial information and business transactions for use in management decision-making. Includes bookkeeping, systems design,

Banking Services

Occupations concerned with cash management, short-term investments, mortgages and other loans, credit cards, and bill payment. Includes accepting deposits, lending funds, and extending credit either through traditional banking institutions or via insurance companies, brokerage houses, or the Internet.

Business Finance

Occupations that manage and implement policy and strategy for an organization's capital structure, budgeting, acquisition and investment, financial modeling and planning, funding, dividends, and taxation.

Insurance

Workers who deliver services that transfer risk from an individual or business to an insurance company in order to protect individuals and businesses from financial losses.

Securities and Investments

Workers who support the flow of funds from investors to companies and institutions. Include financial planning, asset management, hedge fund management, and custody services.

CAREER CLUSTER 7

Government and Public Administration

Are you interested in politics? Are rules and laws important to you?

Government and public administration workers help pass and enforce the law. You could work in national, state, or local government. You will find almost every type of occupation within the government, including some jobs that are only found within government.

For example, you might inspect new or remodeled buildings for safety, help people file the paperwork for a marriage license, or create proposals for urban development.



INTERESTS

- Participating in a debate or on a debate team
- Researching and writing grants
- Learning and speaking a foreign language
- Making speeches
- Running for class or club office
- Volunteering as a legislative aide
- Volunteering for school board/town board position
- Campaigning for political candidates
- Attend city council or other local government meetings
- Visit a local courthouse or public safety building
- Job shadow a state legislative representative
- Run for student government

CAREERS

- Government Investigator (FBI, CIA, DIA)
- Public Works Director
- City or Town Manager
- Congressional Aide
- Legislative Assistant
- State Department Official
- Broadcast News Analysts
- Detectives and Criminal Investigators
- Real Estate Appraisers and Assessors

SUGGESTED HIGH SCHOOL COURSES

- Accounting, Business Law & Mgmt, Economics, Government
- History, Foreign Languages, Humanities, Sociology
- English
- Statistics

Pathways in Government and Public Administration

Foreign Service

Workers who are involved in the operations of U.S. embassies, political and economic analysis or helping American citizens abroad. Includes occupations in embassies, consulates, diplomatic missions, and in Washington, D.C.

Governance

Workers involved in making and executing public policy by working with other officials, constituents, and interest groups. Includes officials elected or appointed to government positions and support staff.

National Security

Occupations focused on keeping the country's people, institutions, systems, technology and economy safe from physical or cyber attack. Includes military positions.

Planning

Occupations related to the developing of long- and short-term land use plans for residential, commercial, institutional and recreational purposes in urban, suburban and rural communities.

Public Management and Administration

Occupations related to the regulations and policies that manage the stewardship of public resources used by government agencies, public corporations, and trusts. Includes budgeting, personnel management, and procurement.

Regulation

Workers who combine technical or industry knowledge with knowledge of related laws, rules and regulatory systems to monitor or influence regulations that protect public health, safety or the environment. Includes regulation of financial, transportation and public utility industries.

Revenue and Taxation

Workers who ensure that governments obtain revenues from businesses and citizens by collecting tax dollars, reviewing tax returns, conducting audits, monitoring taxes payable and collecting overdue tax dollars.

CAREER CLUSTER 8

HEALTH SCIENCE

Would you like to get paid for taking care of others?

Health science workers promote health and wellness. They diagnose and treat injuries and disease. As a physician, dentist, or nurse, you could work directly with patients. You could also work in a laboratory to get information used in research or provide administrative support by keeping medical records.

Health science jobs are found at a variety of different sites. For example, you could work in a hospital, office, clinic, or nursing home. Or you could work on a cruise ship, at a sports arena, or within a patient's home.



INTERESTS

- Learn first aid or CPR
- Volunteer at a vet's office, hospital, nursing home
- Learn how the body/mind works
- Watch medical shows on TV
- Be a team manager on a school athletic team
- Volunteer on an Ambulance team
- Become involved with your community wellness center.
- Attend a health science camp.
- Volunteer at a hospital or nursing home.
- Work as a student manager on a sports team.

CAREERS

- Dietician
- Athletic Trainer
- Pharmacist
- Physician Assistant, Nurse, Radiologic Tech
- Music or Art Therapist
- Dentist or Physician or Surgeon
- Recreational, Occupational Therapists
- Physical Therapist
- Dental Lab Technician

SUGGESTED HIGH SCHOOL COURSES

- Biology, Anatomy
- Chemistry,
- Psychology,
- English,
- Math,
- Music and Art
- Health and PE, First Aid,

Pathways in Health Science

Biotechnology Research and Development

Occupations involved in bioscience research and development as it applies to human health. Workers may study diseases to discover new treatments or invent medical devices used to directly assist patients or to improve the accuracy of diagnostic tests.

Diagnostic Services

Occupations related to the tests and evaluations that aid in the detection, diagnosis and treatment of diseases, injuries or other physical conditions.

Health Informatics

Workers involved in all aspects of managing health care agencies, patient data and information, financial information, and computer applications related to health care processes and procedures. Workers usually have limited interaction with patients.

Support Services

Occupations that interact with patients or the public to provide a therapeutic environment for the delivery of health care. Includes technical and professional careers.

Therapeutic Services

Occupations focused primarily on changing the health status of patients over time through direct care, treatment, counseling, or health education information.

CAREER CLUSTER 9

Hospitality and Tourism

Would you like to get paid to help people have fun?

Hospitality and tourism workers help people enjoy vacations and entertainment activities. You might work at a restaurant, resort, sports arena, theme park, museum, or hotel.

For example, you might manage operations of a college cafeteria, guide high school students on a trip to Spain, or rent equipment at a recreation center.



INTERESTS

- Planning vacations or school trips
- Cooking and baking
- Participating in sports
- Join a committee to plan an event
- Help local businesses cater events within the community
- Work as a student assistant in the school lunch program
- Plan and cook meals for family, friends, or neighborhood events
- Take a part-time job in a restaurant, amusement center, or hotel
- Being a lifeguard

CAREERS

- Recreational Leader
- Camp Counselor
- Travel Agent
- Hospitality Manager
- Hotel Manager
- Chef/Baker/Server/Cook
- Tour Director/Tour Guides and Escorts
- Motion Picture Projectionists

SUGGESTED HIGH SCHOOL COURSES

- English, Foreign Languages,
- Geography, History,
- Child Care Studies,
- Physical education, Health,
- Sociology and Psychology

Pathways in Hospitality and Tourism

Lodging

Occupations related to the operation of lodging facilities and the care of guests who use these facilities, through either direct guest contact or the provision of background services that enhance the guest experience.

Recreation, Amusements and Attractions

Occupations related to the operation or maintenance of facilities, locales, and services designed for recreation or amusement. Includes amusement parks, arcades, performance areas, outdoor areas, museums, and animal attractions.

Restaurants and Food and Beverage Services

Workers who perform a variety of tasks to maintain operations and promote guest services in eating and drinking establishments.

Travel and Tourism

Occupations focused on the development, research, packaging, promotion and delivery of a traveler's experiences. Includes operating a facility, developing promotional materials, planning trips and events, and managing a customer's travel plans.

CAREER CLUSTER 10

HUMAN SERVICES

Do you care about people and want to help in some way?

Human services workers help individuals and families meet their personal needs. You might work in a government office, hospital, nonprofit agency, nursing home, spa, hotel, or school. Or, you might work in your own home.

For example, you might help students with career and education choices at a high school, cut and color hair in a salon, or manage funeral services at a funeral home.

INTERESTS

- Listening and helping friends with problems
- shopping and comparing prices
- Delivering food and clothes to people in need
- Serving home at a homeless shelter
- Planning and making healthy meals and snacks
- Volunteer in a soup kitchen or food shelf.
- Visit people who are homebound.
- Provide child care.
- Coordinate a school wide food and/or clothing drive.
- Volunteer in a hospital or nursing home.
- Intern at a nonprofit agency.
- Learn a world language and study foreign cultures.
- Work as a peer counselor or camp counselor.



CAREERS

- Child care worker
- Deaf Interpreter
- Nutrition counselor
- Costume Attendants
- Epidemiologists
- Massage Therapists
- Mental Health Counselors
- Music Directors and Composers
- Substance Abuse and Behavioral Disorder Counselors

SUGGESTED HIGH SCHOOL COURSES

- Child Care
- Home Economics
- Sociology, Psychology,
- Foreign Languages
- English/Lit., History
- Nursing, Early Child Ed
- Human Development

Pathways in Human Services

Consumer Services

Occupations related to helping individuals with decisions and problems relating to finance, real estate, insurance and consumer goods.

Counseling and Mental Health Services

Workers who assist people with personal, family, educational, mental health, and career decisions and problems. Might work in hospitals, clinics, schools or private settings

Early Childhood Development and Services

Occupations related to the nurturing or teaching of infants and young children in child care centers, nursery schools, preschools, public schools, private households, and before- and after-school programs.

Family and Community Services

Occupations related to helping disabled, elderly, impoverished or other underrepresented populations to secure housing, employment, financial assistance or other social services.

Personal Care Services

Occupations provide services related to an individual's physical care, including cosmetic, spa, fitness, and funeral services.

CAREER CLUSTER II

IT Information Technology

Would you like to get paid to work on computers?

Information technology workers are in a growing and always changing field. You might work with computer hardware, software, multimedia, or network systems. You might design new computer equipment or work on a new computer game.

Some information technology workers support and manage computer hardware. For example, you might make sure the networks are working or manage a network that links people across the world. Or, you might support others and answer questions about specific software or hardware.



INTERESTS

- Play video games
- Assemble computer parts or repair systems
- Develop web pages
- Analyzing data or information
- Documenting and recording information
- Learn or install software programs
- Set up computers and install software.
- Job shadow the technology coordinator at a high school or college.
- Use multimedia for school projects.
- Create a web page for a local organization.
- Set up your own local area network (LAN) for gaming.
- Volunteer to provide technical support for a nonprofit agency.

CAREERS

- Computer System Engineers
- Analysts Architects
- Database Administrators
- Network Systems Analysts
- Web Administrators
- Business Intelligence Analysts
- Computer Security Specialist
- Business Intelligence Analysts
- Computer and Information Scientists

SUGGESTED HIGH SCHOOL COURSES

- Advanced Math courses
- Keyboarding, Computers
- Information Systems, Applied Technology,
- Web Design
- Law and Ethics

Pathways in Information Technology

Information Support and Services

Occupations related to information technology deployment, including implementing computer systems and software, database management, providing technical assistance, and managing information systems.

Network Systems

Occupations related to network analysis, planning and implementation; including design, installation, maintenance and management of network systems.

Programming and Software Development

Occupations involve the design, development, implementation and maintenance of computer systems and software, requiring knowledge of computer operating systems, programming languages and software development.

Web and Digital Communication

Workers involved in the creating, designing and producing of interactive multimedia products and services, including development of digitally-generated or computer-enhanced media used in business, training, entertainment, communications and marketing.

CAREER CLUSTER 12

Law, Public Safety, Corrections and Security

Do you like the idea of protecting people? Can you work in the face of danger? Do you want to help people figure out the legal system?

Law, public safety, corrections, and security workers are found in a variety of settings. For example, you might guard the public and enforce the law as a police officer or security guard. Or, you might provide fire protection as a firefighter.

Other workers provide legal services to people who commit crimes. For example, you might monitor activities within a prison, advise clients of their legal rights, or res
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INTERESTS

- Reading mystery novels or watching mystery movies
- Following court cases in the news
- Volunteering to search for missing pets or children
- Participating in a search and/or rescue training
- Volunteering for the local fire department
- Work as a page at the legislature.
- Visit a local courthouse or public safety office.
- Volunteer with programs for at-risk youth or ex-offenders.
- Job shadow a lawyer at a legal firm.

CAREERS

- Corrections Officer
- Court Reporter or Clerk
- Police Officer or Detective
- Polygraph Examiner
- Fire Fighter or Inspector
- Forensic Artist
- Paralegal
- Probation and Parole Officer

SUGGESTED HIGH SCHOOL COURSES

- Law, Government, History
- Psychology, Sociology
- Data Processing, Computer Literacy,
- Health & PE, First Aid
- Math
- Office Administration

Pathways in Law, Public Safety, and Security

Correction Services

Occupations related to overseeing individuals who have been arrested and are awaiting trial, or who have been convicted of a crime and sentenced to serve time in a jail, reformatory, or penitentiary. Includes the treatment, education and reintegration of offenders.

Emergency and Fire Management Services

Workers involved in public safety and rapid response to fires and emergency situations, including providing medical services after or during traffic accidents, natural disasters, and other medical emergencies.

Law Enforcement Services

Workers who protect the lives and property of community members, including, controlling traffic, preventing and investigating crimes, enforcing laws and ordinances, and apprehending, arresting and processing suspected criminals.

Legal Services

Occupations related to the monitoring, implementing, and upholding of the laws, regulations and ethics that guide institutions, individuals, and society.

Security and Protective Services

Occupations related to the protection of people or property in public buildings. Workers might be in factories, laboratories, museums, shopping malls, government buildings, data processing centers, or other facilities.

CAREER CLUSTER 13

Manufacturing

Are you good working with your hands? Can you figure out how a machine works?

Manufacturing workers work with products and equipment. You might design a new product, decide how the product will be made, or make the product. You might work on cars, computers, appliances, airplanes, or electronic devices.

Other manufacturing workers install or repair products. For example, you might install refrigerators or washers, repair plumbing in commercial buildings, or diagnose engine problems in cars and trucks.



INTERESTS

- Building things such as wood projects
- Taking machine shop classes
- Repairing machinery
- Do basic repairs on home appliances or electronics.
- Visit an auto repair shop.
- Job shadow a machinist.
- Explore apprenticeship opportunities with local companies.
- Participate in local STEM (science, technology, engineering, and math) events.

CAREERS

- Machine Operator
- Welder
- Cabinetmaker or Furniture maker
- Health and Safety Specialist
- Industrial Psychologist
- Operations Research Analyst
- Biofuels Processing Technicians
- Electrical and Electronics Repairers of Commercial and Industrial Equipment
- Engine and Other Machine Assemblers
- Fabric and Apparel Patternmakers

SUGGESTED HIGH SCHOOL COURSES

- Math, Industrial Arts, Shop Mechanics
- Mechanical Drawing
- Geometry
- Chemistry
- Business Management
- Computer Concepts
- Electricity and Electronics
- Blueprint Reading,

Pathways in Manufacturing

Health, Safety and Environmental Assurance

Workers who ensure that workplace equipment is being used safely; plan for new production safety processes; conduct and implement health and preventative safety and/or environmental incident and hazard investigations.

Logistics and Inventory Control

Occupations related to the maintenance and transportation of raw materials and finished parts inventories. Includes moving raw materials to the production line, unloading trucks with raw materials, wrapping pallets of finished products for shipment, and communicating with traffic managers.

Maintenance, Installation and Repair

Occupations involved in preventive maintenance procedures for machines, tools and equipment. Includes troubleshooting and repairing computerized, electrical, electronic and mechanical systems.

Manufacturing Production Process Development

Workers responsible for product design and design of the manufacturing process.

Production

Occupations related to the making or assembling of electronic parts, constructing or assembling modular housing, performing welding jobs, or printing various materials.

Quality Assurance

Workers who assure that standards and procedures are adhered to and that delivered products or services meet performance requirements by monitoring and maintaining the quality of parts and manufacturing processes.

CAREER CLUSTER 14

Marketing, Sales, and Service

Are you friendly and outgoing? Do you enjoy public speaking? Can you be persuasive?

Marketing, sales, and service workers help businesses sell products. You might advertise and promote products so customers want to buy them. Or, you might sell products and services to customers.

For example, you might develop a marketing plan for a small start-up company; sell furniture; or measure and fit lenses and frames for eyeglass customer



INTERESTS

- Give people advice on products they buy
- Sell products for fundraisers
- Take tours of houses for sale
- Design or model clothes
- Decorate homes or rearrange furniture
- Like working with numbers
- Enjoy shopping
- Setting up a fashion show
- Visit an auto repair shop.
- Job shadow a machinist.
- Participate in local STEM (science, technology, engineering, and math) events.

CAREERS

- Meeting, Convention, and Event Planners
- Fashion or Floral Designer
- Retail Store Manager or Clerk
- Customer Service Representative
- Sales manager
- Fashion Model
- Survey Researchers
- Floral Designers
- Wholesale and Retail Buyers
- Wholesale and Manufacturing Sales Representatives of Technical or Scientific Products

SUGGESTED HIGH SCHOOL COURSES

- Intro to Business, Business Math, Accounting
- Keyboarding, Computer Literacy, English
- Marketing, Art

Pathways in Marketing, Sales, and Service

Market Research

Occupations that collect and analyze different types of information to design new products, to predict future sales, and to position a company's strategies against those of its competitors.

Marketing Communications

Workers who plan, coordinate and implement marketing strategies, advertising, promotion and public relations activities.

Marketing Management

Occupations related to the management of policies, operations or staff working in advertising, promotions, marketing, sales, marketing research, merchandising, or public relations in businesses and corporations, nonprofit institutions, and other organizations.

Merchandising

Occupations related to getting products into the hands of customers, including forecasting, planning, buying, displaying, selling and providing customer service.

Professional Sales

Occupations involved in the act of convincing businesses or individual consumers to purchase goods and services.

CAREER CLUSTER 15

Science, Technology, Engineering and Mathematics

Are you detail-oriented? Do you want to know how things work, or enjoy solving problems?

Science, technology, engineering, and mathematics workers do scientific research in laboratories or the field. Others plan or design products and systems. Or, you might support scientists, mathematicians, or engineers as they do their work.

For example, you might oversee the construction of roads, develop systems to prevent diseases, or help engineers do research and read blueprints.



INTERESTS

- Collecting rocks or fossils
- Identifying plants and animals
- Conducting science experiments
- Watching the weather
- Designing and test vehicles or planes
- Developing new products or machinery
- Stargazing
- Designing experiments
- Prepare a project for a science fair.
- Learn computer applications or technology related to the field, like CAD.
- Job shadow an engineer or scientist.

CAREERS

- Anthropologist
- Physicist
- Energy Engineers
- Environmental Engineers
- Environmental Scientists
- Computer Hardware Engineer
- Archivists
- Astronomers
- Atmospheric and Space Scientists
- Biochemical Engineers

SUGGESTED HIGH SCHOOL COURSES

- Earth Science, Biology, Chemistry, Physics
- Anatomy
- Advanced Math
- Computer Technology,
- English
- Drafting
- Statistics

Pathways in Science, Technology, Engineering, and Mathematics

Engineering and Technology

Workers who apply mathematics, science and technology concepts to solve problems quantitatively in engineering projects involving design, development or production in various technologies.

Science and Mathematics

Workers who apply essential mathematics and science content and skills to physical, environmental and human endeavors. Includes the instruction of related knowledge.

CAREER CLUSTER 16

Transportation, Distribution and Logistics

Have you always been fascinated by vehicles? Do you like to drive them or fix them?

Transportation, distribution, and logistics workers move people and products by road, air, rail, and water. You might work as a driver, pilot, engineer, or captain.

You might repair or maintain the vehicles, trains, planes, and ships that move people and products. Or, you might work behind the scenes to make sure the products and people get to the right place on time.



INTERESTS

- Job shadow a transportation manager or dispatcher.
- Intern at a local garage or motorcycle shop to learn the basics of auto or small engine repair.
- Creating models of cars or trains
- Flying
- Boating
- Interested in knowing how machines work
- Interested in fixing all types of machines
- Interested in the distribution of good

CAREERS

- Commercial Pilots
- Air Traffic Control
- Transportation Specialist
- Aerospace technicians
- Air Cargo Handlers
- Bus and Auto Mechanics
- Motorboat Mechanics
- Electrical Equipment Installers
- Bus and Truck Mechanics

SUGGESTED HIGH SCHOOL COURSES

- Math, Science, English
- Electricity and Electronics
- Logistics

Pathways in Transportation, Distribution, and Logistics

Facility and Mobile Equipment Maintenance

Occupations related to the maintenance, repair, and servicing of vehicles and transportation facilities, as well as the refueling of mobile equipment. Includes workers involved in developing more efficient, safe, and cost-effective ways to operate or maintain equipment.

Health, Safety and Environmental Management

Occupations involve assessing and managing risks associated with safety and environmental issues.

Logistics Planning and Management Services

Occupations involve the planning, management and control of the physical distribution of materials, products, and people.

Sales and Service

Workers involved in the marketing and selling of transportation services to new customers as well as the management of existing customer relationships and customer service.

Transportation Operations

Workers who drive or pilot the vehicles that transport people or freight to ensure that passengers or cargo are transported safely and on time.

Transportation Systems/Infrastructure Planning, Management and Regulation

Occupations related to all aspects of the design and operation of public transportation systems -- road, air, sea and rail. Worker might be employed by federal, state and local transportation agencies.

Warehousing and Distribution Center Operations

Occupations focused on the operation of transportation and distribution facilities including ports, terminals, warehouses, and other types of facilities.