



## JOB TITLES AND ASSOCIATED TASKS Sorted by Cognofile

### Practical Cognofile

#### **11-9012.00 Farmers and Ranchers Entry – Mid – Senior level position assuming education and experience prerequisite**

Harvests crops and collects specialty products, such as royal jelly from queen bee cells and honey from honeycombs. Sets up and operates farm machinery to till soil, plant, prune, fertilize, apply herbicides and pesticides, and haul harvested crops. Inspects growing environment to maintain optimum growing or breeding conditions. Determines kind and quantity of crops or livestock to be raised, according to market conditions, weather, and farm size. Breeds and raises stock, such as animals, poultry, honeybees, or earthworms. Arranges with buyers for sale and shipment of crops. Hires and directs workers engaged in planting, cultivating, irrigating, harvesting, and marketing crops and raising livestock. Assembles, positions, and secures structures, such as trellises or beehives, using hand tools. Lubricates, adjusts, and makes minor repairs on farm equipment, using oilcan, grease gun, and hand tools. Grades and packages crop for marketing. Maintains employee and financial records. Demonstrates and explains farm work techniques and safety regulations to workers. Installs irrigation systems and irrigates fields. Selects and purchases supplies and equipment, such as seed, tree stock, fertilizers, farm machinery, implements, livestock, and feed. Destroys diseased or superfluous crops, such as queen bee cells, bee colonies, parasites, and vermin. Plans harvesting considering ripeness and maturity of crop and weather conditions. Grows out of season crops in greenhouse or early crops in cold-frame bed, or buds and grafts plant stock.

#### **17-1012.00 Landscape Architects Entry – Mid level position assuming education and experience prerequisite**

Prepares site plans, specifications, and cost estimates for land development, coordinating arrangement of existing and proposed land features and structures. Compiles and analyzes data on conditions, such as location, drainage, and location of structures for environmental reports and landscaping plans. Inspects landscape work to ensure compliance with specifications, approve quality of materials and work, and advise client and construction personnel. Confers with clients, engineering personnel, and architects on overall program.

#### **17-2111.02 Fire Prevention and Protection Engineers Entry – Mid – Senior level position assuming education and experience prerequisite**

Determines fire causes and methods of fire prevention. Designs fire detection equipment, alarm systems, fire extinguishing devices and systems, or structural components protection. Recommends and advises on use of fire detection equipment, extinguishing devices, or methods to alleviate conditions conducive to fire. Advises and plans for prevention of destruction by fire, wind, water, or other causes of damage. Evaluates fire departments and laws and regulations affecting fire prevention or fire safety. Organizes and trains personnel to carry out fire protection programs. Conducts research on fire retardants and fire safety of materials and devices to determine cause and methods of fire prevention. Studies buildings to evaluate fire prevention factors, resistance of construction, contents, water supply and delivery, and exits.

#### **17-3022.00 Civil Engineering Technicians Entry – Mid level position assuming education and experience prerequisite**

Inspects project site and evaluates contractor work to detect design malfunctions and ensure conformance to design specifications and applicable codes. Drafts detailed dimensional drawings and designs layouts for projects and to ensure conformance to specifications. Reads and reviews project blueprints and structural specifications to determine dimensions of structure or system and material requirements. Develops plans and estimates costs for installation of systems, utilization of facilities, or construction of structures. Responds to public suggestions and complaints. Evaluates facility to determine suitability for occupancy and square footage availability. Prepares reports and documents project activities and data. Confers with supervisor to determine project details, such as plan preparation, acceptance testing, and evaluation of field conditions. Conducts materials test and analysis, using tools and equipment, and applying engineering knowledge. Reports maintenance problems occurring at project site to supervisor and negotiates changes to resolve system conflicts. Calculates dimensions, square footage, Cognofile and component specifications, and material quantities, using calculator or computer. Plans and conducts field surveys to locate new sites and analyze details of project sites. Analyzes proposed site factors and designs maps, graphs, tracings, and diagrams to illustrate findings.

#### **17-3023.01 Electronics Engineering Technicians Entry – Mid level position assuming education and experience prerequisite**

Reads blueprints, wiring diagrams, schematic drawings, and engineering instructions for assembling electronics units, applying knowledge of electronic theory and components. Assembles circuitry or electronic components, according to engineering instructions, technical manuals, and knowledge of electronics using hand tools and power tools. Fabricates parts, such as coils, terminal boards, and chassis, using bench lathes, drills, or other machine tools.



## JOB TITLES AND ASSOCIATED TASKS Sorted by Cognofile

Tests electronics unit, using standard test equipment, to evaluate performance and determine needs for adjustments. Designs basic circuitry and sketches for design documentation, as directed by engineers, using drafting instruments and computer aided design equipment. Assists engineers in development of testing techniques, laboratory equipment, and circuitry or installation specifications, by writing reports and recording data. Adjusts and replaces defective or improperly functioning circuitry and electronics components, using hand tools and soldering iron.

### **17-3023.02 Calibration and Instrumentation Technicians Entry – Mid level position assuming education and experience prerequisite**

Plans sequence of testing and calibration program for instruments and equipment according to blueprints, schematics, technical manuals, and other specifications. Modifies performance and operation of component parts and circuitry to specifications, using test equipment and precision instruments. Selects sensing, telemetering, and recording instrumentation and circuitry. Sets up test equipment and conducts tests on performance and reliability of mechanical, structural, or electromechanical equipment. Disassembles and reassembles instruments and equipment, using hand tools, and inspects instruments and equipment for defects. Analyzes and converts test data, using mathematical formulas, and reports results and proposed modifications. Confers with engineers, supervisor, and other technical workers to assist with equipment installation, maintenance, and repair techniques. Performs preventative and corrective maintenance of test apparatus and peripheral equipment. Sketches plans for developing jigs, fixtures, instruments, and related nonstandard apparatus.

### **17-3023.03 Electrical Engineering Technicians Entry – Mid level position assuming education and experience prerequisite**

Sets up and operates test equipment to evaluate performance of developmental parts, assemblies, or systems under simulated operating conditions. Plans method and sequence of operations for testing and developing experimental electronic and electrical equipment. Modifies electrical prototypes, parts, assemblies, and systems to correct functional deviations. Assembles electrical and electronic systems and prototypes according to engineering data and knowledge of electrical principles, using hand tools and measuring instruments. Draws diagrams and writes engineering specifications to clarify design details and functional criteria of experimental electronics units. Maintains and repairs testing equipment. Collaborates with electrical engineer and other personnel to solve developmental problems. Analyzes and interprets test information.

### **17-3024.00 Electro-Mechanical Technicians Entry – Mid level position assuming education and experience prerequisite**

Operates metalworking machines to fabricate housings, jigs, fittings, and fixtures. Aligns, fits, and assembles component parts, using hand tools, power tools, fixtures, templates, and microscope. Installs electrical and electronic parts and hardware in housing or assembly, using soldering equipment and hand tools. Tests performance of electromechanical assembly, using test instruments such as oscilloscope, electronic voltmeter, and bridge. Analyzes and records test results and prepares written documentation. Reads blueprints, schematics, diagrams, and technical orders to determine method and sequence of assembly. Inspects parts for surface defects. Verifies dimensions and clearances of parts to ensure conformance to specifications, using precision measuring instruments. Repairs, reworks, and calibrates assemblies to meet operational specifications and tolerances.

### **17-3025.00 Environmental Engineering Technicians Entry – Mid level position assuming education and experience prerequisite**

Apply theory and principles of environmental engineering to modify, test and operate equipment and devices used in the prevention, control, and remediation of environmental pollution, including waste treatment and site remediation. May assist in the development of environmental pollution remediation devices under direction of engineer.

### **17-3026.00 Industrial Engineering Technicians Entry – Mid level position assuming education and experience prerequisite**

Studies time, motion, methods, and speed involved in maintenance, production, and other operations to establish standard production rate and improve efficiency. Prepares charts, graphs, and diagrams to illustrate workflow, routing, floor layouts, material handling, and machine utilization. Observes workers operating equipment or performing tasks to determine time involved and fatigue rate, using timing devices. Recommends revision to method of operation, material handling, equipment layout, or other changes to increase production or improve standards. Observes worker using equipment to verify that equipment is being operated and maintained according to quality assurance standards. Evaluates data and writes reports to validate or indicate deviations from existing standards. Prepares graphs or charts or data or enters data into computer for analysis. Aids in planning work assignments in accordance with worker performance, machine capacity, production schedules, and anticipated delays. Selects products for tests at specified stages in

production process, and tests products for performance characteristics and adherence to specifications. Compiles and evaluates statistical data to determine and maintain quality and reliability of products. Reads worker logs, product processing sheets, and specification sheets, to verify that records adhere to quality assurance specifications. Interprets engineering drawings, schematic diagrams, or formulas and confers with management or engineering staff to determine quality or production standards to achieve optimum quality within limits of equipment capability. Recommends modifications to existing quality or production standards to achieve optimum quality within limits of equipment capability. Records test data, applying statistical quality control procedures.

**17-3027.00 Mechanical Engineering Technicians Entry – Mid level position assuming education and experience prerequisite**

Reviews project instructions and blueprints to ascertain test specifications, procedures, objectives, and tests nature of technical problems, such as redesign. Tests equipment, using test devices attached to generator, voltage regulator, or other electrical parts, such as generators or spark plugs. Analyzes tests results in relation to design or rated specifications and test objectives and modifies or adjusts equipment to meet specifications. Estimates cost factors, including labor and material for purchased and fabricated parts and costs for assembly, testing, and installing. Inspects lines and figures for clarity and returns erroneous drawings to designer for correction. Prepares parts sketches and writes work orders and purchase requests to be furnished by outside contractors. Reads dials and meters to determine amperage, voltage, electrical out and input at specific operating temperature to analyze parts performance. Operates drill press, grinders, engine lathe, or other machines to modify parts tested or to fabricate experimental parts for testing. Evaluates tool drawing designs by measuring drawing dimensions and comparing with original specifications for form and function, using engineering skills. Confers with technicians and submits reports of test results to engineering department and recommends design or material changes. Records test procedures and results, numerical and graphical data, and recommendations for changes in product or test methods. Drafts detail drawing or sketch for drafting room completion or to request parts fabrication by machine, sheet or wood shops. Calculates required capacities for equipment of proposed system to obtain specified performance and submits data to engineering personnel for approval. Discusses changes in design, method of manufacture and assembly, and drafting techniques and procedures with staff and coordinates corrections. Reviews project instructions and specifications to identify, modify and plan requirements fabrication, assembly and testing. Sets up prototype and test apparatus and operates test controlling equipment to observe and record prototype test results. Sets up and conducts tests of complete units and components under operational conditions to investigate proposals for improving equipment performance. Devises, fabricates, and assembles new or modified mechanical components for products, such as industrial machinery or equipment, and measuring instruments.

**17-3031.01 Surveying Technicians Entry – Mid level position assuming education and experience prerequisite**

Obtains land survey data, such as angles, elevations, points, and contours, using electronic distance measuring equipment and other surveying instruments. Compiles notes, sketches, and records of survey data obtained and work performed. Directs work of subordinate members of party, performing surveying duties not requiring licensure.

**17-3031.02 Mapping Technicians Entry – Mid level position assuming education and experience prerequisite**

Computes and measures scaled distances between reference points to establish exact relative position of adjoining prints. Forms three-dimensional image of aerial photographs taken from different locations, using mathematical and aides and plotting instruments. Verifies identification of topographical features and accuracy of contour lines by comparison with aerial photographs, old maps, and other reference materials. Supervises and coordinates activities of workers engaged in drafting maps or in production of blueprints, photostats, and photographs. Stores, retrieves, and compares map information, using computers and data banks. Analyzes aerial photographs to detect and interpret significant military, industrial, resource, or topographical data. Trims, aligns, and joins prints to form photographic mosaic, maintaining scaled distances between reference points. Marks errors and makes corrections, such as numbering grid lines or lettering names of rivers or towns. Lays out and matches aerial photographs in sequence taken, looking for missing areas. Traces contours and topographical details to produce map. Calculates latitude, longitude, angles, areas, and other information for mapmaking from survey field notes, using reference tables and computer.

**19-1031.01 Soil Conservationists Entry – Mid – Senior level position assuming education and experience prerequisite**

Plans soil management practices, such as crop rotation, reforestation, permanent vegetation, contour plowing, or terracing, to maintain soil and conserve water. Develops plans for conservation, such as conservation cropping systems, woodlands management, pasture planning and engineering systems. Analyzes results of investigations to determine measures needed to maintain or restore proper soil management. Monitors projects during and after construction to ensure projects conform to design specifications. Surveys property to mark locations and measurements, using surveying instruments. Revisits land users to view implemented land use practices and plans. Discusses conservation plans

problems, and alternative solutions with land users, applying knowledge of agronomy, soil science, forestry, or agricultural sciences. Computes cost estimates of different conservation practices based on needs of land users, maintenance requirements and life expectancy of practices. Develops or participates in environmental studies. Computes design specification for implementation of conservation practices, using survey and field information technical guides, engineering manuals, and calculator. Conducts surveys and investigations of various land uses, such as rural or urban, agriculture, construction, forestry or mining.

**19-1031.02 Range Managers Entry – Mid – Senior level position assuming education and experience prerequisite**  
Studies rangelands to determine best grazing seasons. Develops methods for protecting range from fire and rodent damage. Plans and directs construction of range improvements, such as fencing, corrals, stock-watering reservoirs and soil-erosion control structures. Plans and directs maintenance of range improvements. Develops methods for controlling poisonous plants in rangelands. Studies rangelands to determine number and kind of livestock that can be most profitably grazed. Develops improved practices for range reseeding. Studies forage plants and their growth requirements to determine varieties best suited to particular range.

**19-1031.03 Park Naturalists Entry – Mid – Senior level position assuming education and experience prerequisite**  
Conducts field trips to point out scientific, historic, and natural features of park. Constructs historical, scientific, and nature visitor-center displays. Surveys park to determine forest conditions. Plans and organizes activities of seasonal staff members. Performs emergency duties to protect human life, government property, and natural features of the park. Maintains official park photographic and information files. Surveys park to determine distribution and abundance of fauna and flora. Takes photographs and motion pictures to illustrate lectures and publication and to develop displays. Prepares and presents illustrated lectures of park features. Plans and develops audiovisual devices for public programs. Confers with park staff to determine subjects to be presented to public. Interviews specialists in desired fields to obtain and develop data for park information programs.

**19-1032.00 Foresters Entry – Mid – Senior level position assuming education and experience prerequisite**  
Plans and directs forestation and reforestation projects. Investigates adaptability of different tree species to new environmental conditions, such as soil type, climate and altitude. Determines methods of cutting and removing timber with minimum waste and environmental damage. Studies classification, life history, light and soil requirements and resistance to disease and insects of different tree species. Manages tree nurseries and thins forest to encourage natural growth of sprouts or seedlings of desired varieties. Assists in planning and implementing projects for control of floods, soil erosion, tree diseases, infestation, and forest fire. Develops techniques for measuring and identifying trees. Advises landowners on forestry management techniques. Directs suppression of forest fires and fights forest fires. Supervises activities of other forestry workers. Suggests methods of processing wood for various uses. Conducts public educational programs on forest care and conservation. Plans and directs construction and maintenance of recreation facilities, fire towers, trails, roads, and firebreaks. Participates in environmental studies and prepares environmental reports. Maps forest areas and estimates standing timber and future growth. Analyzes forest conditions to determine reason for prevalence of different variety of trees. Researches forest propagation and culture affecting tree growth rates, yield, and duration and seed production, growth viability, and germination of different species. Plans cutting programs to assure continuous production or to assist timber companies to achieve production goals.

**19-4011.01 Agricultural Technicians Entry – Mid level position assuming education and experience prerequisite**  
Sets up laboratory and field equipment to assist research workers. Cleans and maintains laboratory and field equipment and work areas. Plants seeds in specified area, and counts plants that grow, to determine germination rate of seeds. Pricks animals, and collects blood samples for testing, using hand-held devices. Records production and test data for evaluation by personnel. Measures or weighs ingredients used in testing or as animal feed. Adjusts testing equipment and prepares culture media, following standard procedures. Waters and feeds rations to livestock and laboratory animals. Examines animals and specimens to determine presence of disease or other problems.

**19-4011.02 Food Science Technicians Entry – Mid level position assuming education and experience prerequisite**  
Conducts standardized tests on food, beverages, additives, and preservatives to ensure compliance to standards for factors such as color, texture, nutrients, and coloring. Tastes or smells food or beverages to ensure flavor meets specifications or to select samples with specific characteristics. Computes moisture or salt content, percentage of ingredients, formulas, or other product factors, using mathematical and chemical procedures. Mixes, blends, or cultivates ingredients to make reagents or to manufacture food or beverage products. Prepares slides and incubates slides with cell cultures. Orders supplies to maintain inventory in laboratory or in storage facility of food or beverage processing plant. Measures, tests, and weighs bottles, cans, and other containers to ensure hardness, strength, and dimensions meet

specifications. Cleans and sterilizes laboratory equipment. Records and compiles test results, and prepares graphs, charts, and reports.

Examines chemical and biological samples to identify cell structure, bacteria, or extraneous material, using microscope. Analyzes test results to classify product, or compares results with standard tables.

**19-4021.00 Biological Technicians Entry – Mid level position assuming education and experience prerequisite**

Sets up laboratory and field equipment to assist research workers. Plants seeds in specified area, and counts plants that grow, to determine germination rate of seeds. Pricks animals, and collects blood samples for testing, using hand-held devices. Records production and test data for evaluation by personnel. Measures or weighs ingredients used in testing or as animal feed. Adjusts testing equipment and prepares culture media, following standard procedures. Waters and feeds rations to livestock and laboratory animals. Examines animals and specimens to determine presence of disease or other problems. Cleans and maintains laboratory and field equipment and work areas.

**19-4031.00 Chemical Technicians Entry – Mid level position assuming education and experience prerequisite**

Tests and analyzes chemical and physical properties of liquids, solids, gases, radioactive and biological materials, and products such as perfumes. Prepares chemical solutions for products and processes, following standardized formulas or creates experimental formulas. Sets up and calibrates laboratory equipment and instruments used for testing, process control, product development, and research. Documents results of tests and analyses, and writes technical reports or prepares graphs and charts. Directs other workers in compounding and distilling chemicals. Reviews process paperwork for products to ensure compliance to standards and specifications. Cleans and sterilizes laboratory equipment.

**19-4041.01 Geological Data Technicians Entry – Mid level position assuming education and experience prerequisite**

Measures geological characteristics used in prospecting for oil or gas, using measuring instruments. Records readings to obtain data used in prospecting for oil or gas. Evaluates and interprets core samples and cuttings, and other geological data used in prospecting for oil or gas. Reads and studies reports to compile information and data for geological and geophysical prospecting. Collects samples and cuttings, using equipment and hand tools. Sets up, or directs set-up, of instruments used to collect geological data. Prepares and attaches packing instructions to shipping container. Develops and designs packing materials and handling procedures for shipping of objects. Diagnoses and repairs malfunctioning instruments and equipment, using manufacturers' manuals and hand tools. Develops and prints photographic recordings of information, using equipment. Plans and directs activities of workers who operate equipment to collect data, or operates equipment. Assembles, maintains, and distributes information for library or record system. Interviews individuals and researches public databases to obtain information Operates and adjusts equipment and apparatus to obtain geological data.

**19-4041.02 Geological Sample Test Technicians Entry – Mid level position assuming education and experience prerequisite**

Tests samples for content and characteristics, using laboratory apparatus and testing equipment. Analyzes samples to determine presence, quantity, and quality of products, such as oil or gases. Assembles and disassembles testing, measuring, and mechanical equipment and devices. Collects solid and fluid samples from oil-or-gas bearing formations for analysis. Records testing and operational data for review and further analysis. Adjusts and repairs testing, electrical, and mechanical equipment and devices. Supervises and coordinates activities of workers, including initiating and recommending personnel actions. Inspects engines for wear and defective parts, using equipment and measuring devices.

**19-4051.01 Nuclear Equipment Operation Technicians Entry – Mid level position assuming education and experience prerequisite**

Sets control panel switches and activates equipment, such as nuclear reactor, particle accelerator, or gamma radiation equipment, according to specifications. Calculates equipment-operating factors, such as radiation time, dosage, temperature, and pressure, using standard formulas and conversion tables. Monitors instruments, gauges, and recording devices in control room during operation of equipment, under directions of nuclear experimenter. Reviews experiment schedule to determine specifications, such as subatomic article parameters, radiation time, dosage, and gamma intensity. Positions fuel elements in reactor or environmental chamber, according to specified configuration, using slave manipulators or extension tools. Installs instrumentation leads in reactor core to measure operating temperature and pressure according to mockups, blueprints, and diagrams. Modifies, devises, and maintains equipment used in operations. Disassembles, cleans, and decontaminates hot cells and reactor parts during maintenance shutdown, using slave manipulators, crane, and hand tools. Writes summary of activities or records experiment data in log for further analysis by engineers, scientists, or customers, or for future reference. Communicates with maintenance personnel to

ensure readiness of support systems and to warn of radiation hazards. Tests physical, chemical, or metallurgical properties of experimental materials according to standardized procedures, using test equipment and measuring instruments. Withdraws radioactive sample for analysis, fills container with prescribed quantity of material for shipment, or removes spent fuel elements. Sets up and operates machines to saw fuel elements to size or to cut and polish test pieces, following blueprints and other specifications. Transfers experimental materials to and from specified containers and to tube, chamber or tunnel, using slave manipulators or extension tools. Controls laboratory-compounding equipment enclosed in protective hot cell to prepare radioisotopes and other radioactive materials. Adjusts controls of equipment to control particle beam, chain reaction or radiation, according to specifications.

**19-4051.02 Nuclear Monitoring Technicians Entry – Mid level position assuming education and experience prerequisite**

Measures intensity and identifies type of radiation in work areas, equipment, and materials, using radiation detectors and other instruments. Collects samples of air, water, gases and solids to determine radioactivity levels of contamination. Assists in setting-up equipment that automatically detects area radiation deviations and tests detection equipment to ensure accuracy. Calculates safe radiation exposure time for personnel, using plant contamination readings and prescribed safe levels of radiation. Scans photographic emulsions exposed to direct radiation to compute track properties from standard formulas, using microscope with scales and protractors. Calibrates and maintains chemical instrumentation sensing elements and sampling system equipment, using calibrations instruments and hand tools. Monitors personnel for length and intensity of exposure to radiation for health and safety purposes. Places radioactive waste, such as sweepings and broken sample bottles, into containers for disposal. Decontaminates objects by cleaning with soap or solvents or by abrading, using wire brush, buffing wheel or sandblasting machine. Enters data into computer to record characteristics of nuclear events and locating coordinates of particles. Weighs and mixes decontamination chemical solutions in tank and immerses objects in solution for specified time, using hoist. Determines or recommends radioactive decontamination procedures, according to size and nature of equipment and degree of contamination. Instructs personnel in radiation safety procedures and demonstrates use of protective clothing and equipment. Confers with scientist directing project to determine significant events to watch for during test. Prepares reports on contamination tests, material and equipment decontaminated, and methods used in decontamination process. Informs supervisors to take action when individual exposures or area radiation levels approach maximum permissible limits. Observes projected photographs to locate particle tracks and events and compiles lists of events from particle detectors.

**19-4061.01 City Planning Aides Entry – Mid level position assuming education and experience prerequisite**

Summarizes information from maps, reports, investigations, and books. Answers public inquiries. Prepares reports, using statistics, charts, and graphs, to illustrate planning studies in areas, such as population, land use, or zoning. Prepares and updates files and records. Conducts interviews and surveys and observes conditions, which affect land usage.

**19-4091.00 Environmental Science and Protection Technicians, Including Health Entry – Mid level position assuming education and experience prerequisite**

Collects samples of gases, soils, water, industrial wastewater, and asbestos products to conduct tests on pollutant levels. Performs chemical and physical laboratory and field tests on collected samples to assess compliance with pollution standards, using test instruments. Examines and analyzes material for presence and concentration of contaminants such as asbestos in environment, using variety of microscopes. Calculates amount of pollutant in samples or computes air pollution or gas flow in industrial processes, using chemical and mathematical formulas. Determines amounts and kinds of chemicals to use in destroying harmful organisms and removing impurities from purification systems. Prepares samples or photomicrographs from testing and analysis. Discusses test results and analyses with customers. Calibrates microscopes and test instruments. Develops procedures and directs activities of workers in laboratory. Records test data and prepares reports, summaries, and charts that interpret test results and recommend changes. Sets up equipment or station to monitor and collect pollutants from sites, such as smoke stacks, manufacturing plants, or mechanical equipment. Weighs, analyzes, and measures collected sample particles, such as lead, coal dust, or rock, to determine concentration of pollutants. Conducts standardized tests to ensure materials and supplies used throughout power supply system meet processing and safety specifications.

**19-4092.00 Forensic Science Technicians Entry – Mid level position assuming education and experience prerequisite**

Examines, tests, and analyzes tissue samples, chemical substances, physical materials, and ballistics evidence, using recording, measuring, and testing equipment. Testifies as expert witness on evidence or laboratory techniques in trials or hearings. Prepares reports or presentations of findings, investigative methods, or laboratory techniques. Reconstructs crime scene to determine relationships among pieces of evidence. Interprets laboratory findings and test results to identify

and classify substances, materials, and other evidence collected at crime scene. Confers with ballistics, fingerprinting, handwriting, documents, electronics, medical, chemicals, or metallurgical experts concerning evidence and its interpretation. Collects and preserves criminal evidence used to solve cases.

**19-4093.00 Forest and Conservation Technicians Entry – Mid level position assuming education and experience prerequisite**

Compile data pertaining to size, content, condition, and other characteristics of forest tracts, under direction of foresters. Train and lead forest workers in forest propagation, fire prevention and suppression. May assist conservation specialists in managing, improving, and protecting rangelands and wildlife habitats. Provide technical assistance regarding the conservation of soil, water, and related natural resources.

**23-2091.00 Court Reporters Entry – Mid level position assuming education and experience prerequisite**

Use verbatim methods and equipment to capture, store, retrieve, and transcribe pretrial and trial proceedings or other information. Includes stenocaptioners who operate computerized stenographic captioning equipment to provide captions of live or prerecorded broadcasts for hearing impaired viewers.

**27-1012.00 Craft Artists Entry – Mid – Senior level position assuming education and experience prerequisite**

Create or reproduce hand-made objects for sale and exhibition using a variety of techniques, such as welding, weaving, pottery, and needlecraft.

**27-2021.00 Athletes and Sports Competitors Entry – Mid – Senior level position assuming education and experience prerequisite**

Participates in athletic events and competitive sports, according to established rules and regulations. Plays professional sport and is identified according to sport played, such as football, basketball, baseball, hockey, or boxing. Represents team or professional sports club, speaking to groups involved in activities, such as sports clinics and fundraisers. Exercises and practices under direction of athletic trainer or professional coach to prepare and train for competitive events.

**27-4011.00 Audio and Video Equipment Technicians Entry – Mid level position assuming education and experience prerequisite**

Determines format, approach, content, level, and medium to meet objectives most effectively within budgetary constraints, utilizing research, knowledge, and training. Locates and secures settings, properties, effects, and other production necessities. Constructs and positions properties, sets, lighting equipment, and other equipment. Develops manuals, texts, workbooks, or related materials for use in conjunction with production materials. Develops production ideas based on assignment or generates own ideas based on objectives and interest. Directs and coordinates activities of assistants and other personnel during production. Conducts training sessions on selection, use, and design of audiovisual materials, and operation of presentation equipment. Performs narration or presents announcements. Executes, or directs assistants to execute, rough and finished graphics and graphic designs. Plans and develops preproduction ideas into outlines, scripts, continuity, storyboards, and graphics, or directs assistants to develop ideas. Sets up, adjusts, and operates equipment, such as cameras, sound mixers, and recorders during production.

**27-4012.00 Broadcast Technicians Entry – Mid level position assuming education and experience prerequisite**

Lays electrical cord and audio and video cables between vehicle, microphone, camera, and reporter or person to be interviewed. Aligns antennae with receiving dish to obtain clearest signal for transmission of news event to station. Monitors transmission of news event to station and adjusts equipment as needed to maintain quality broadcast. Performs preventive and minor equipment maintenance, using hand tools. Selects source, such as satellite or studio, from which program will be recorded. Observes monitors and converses with station personnel to set audio and video levels and to verify station is on-air. Drives news van to location of news events. Produces educational and training films and videotapes, including selection of equipment and preparation of script. Instructs trainees how to use television production equipment, to film events, and to copy/edit graphics or sound onto videotape. Edits manuals, schedules programs, and prepares reports outlining past and future programs, including content. Maintains log, as required by station management and Federal Communications Commission. Reads television-programming log to ascertain program to be recorded or aired. Previews scheduled program to ensure that signal is functioning and program is ready for transmission. Sets up, operates, and maintains radio and television production equipment to broadcast programs or events.

**27-4013.00 Radio Operators Entry – Mid level position assuming education and experience prerequisite**

Communicates by radio with test pilot, engineering personnel, and others during flight-testing to relay information.

Turns controls or throws switches to activate power, adjust voice volume and modulation, and set transmitter on specified frequency. Repairs transmitting equipment, using electronic testing equipment, hand tools, and power tools, to maintain communication system in operative condition. Communicates with receiving operator to give and receive instruction for transmission. Determines and obtains bearings of source from which signal originated, using direction finding procedures and equipment. Operates sound recording equipment to record signals and preserve broadcast for analysis by intelligence personnel. Examines and operates new equipment prior to installation in airport radio stations. Reviews Company and Federal Aviation Authority regulations regarding radio communications and reports violations. Establishes and maintains standards of operation by periodic inspections of equipment and routine tests. Maintains station log of messages transmitted and received for activities such as flight-testing and fire locations. Coordinates radio searches for overdue or lost airplanes. Monitors emergency frequency for distress calls and dispatches emergency equipment.

**27-4031.00 Camera Operators, Television, Video, and Motion Picture Entry – Mid level position assuming education and experience prerequisite**

Sets up cameras, optical printers and related equipment to produce photographs and special effects. Selects cameras, accessories, equipment, and film stock to use during filming, using knowledge of filming techniques, requirements, and computations. Observes set or location for potential problems and to determine filming and lighting requirements. Reads work order to determine specifications and location of subject material. Confers with director and electrician regarding interpretation of scene, desired effects filming and lighting requirements. Exposes frames of film in sequential order and regulates exposures and aperture to obtain special effects. Instructs camera operators regarding camera setup, angles, distances, movement, and other variables and cues for starting and stopping filming. Reads charts and computes ratios to determine variables, such as lighting, shutter angles, filter factors, and camera distance. Analyzes specifications to determine work procedures, sequence of operations, and machine setup. Views film to resolve problems or exposure control, subject and camera movement, changes in subject distance, and related variables. Adjusts position and controls of camera, printer and related equipment to produce desired effects, using precision measuring instruments.

**29-1111.00 Registered Nurses Entry – Mid – Senior level position assuming education and experience prerequisite**

Provides health care, first aid, and immunization in facilities such as schools, hospitals, and industry. Observes patient's skin color, dilation of pupils, and computerized equipment to monitor vital signs. Records patient's medical information and vital signs. Prepares patients for and assists with examinations. Prepares rooms, sterile instruments, equipment and supplies, and hands items to surgeon. Orders, interprets, and evaluates diagnostic tests to identify and assess patient's condition. Delivers infants and performs postpartum examinations and treatment. Instructs on topics, such as health education, disease prevention, child birth, and home nursing and develops health improvement programs. Advises and consults with specified personnel concerning necessary precautions to be taken to prevent possible contamination or infection. Administers stipulated emergency measures, and contacts obstetrician when deviations from standard are encountered during pregnancy or delivery. Informs physician of patient's condition during anesthesia. Discusses cases with physician or obstetrician.

Provides prenatal and postnatal care to obstetrical patients under supervision of obstetrician. Contracts independently to render nursing care, usually to one patient, in hospital or private home. Directs and coordinates infection control program in hospital. Maintains stock of supplies. Conducts specified laboratory tests. Refers students or patients to community agencies furnishing assistance and cooperates with agencies.

Prescribes or recommends drugs or other forms of treatment, such as physical therapy, inhalation therapy, or related therapeutic procedures. Administers local, inhalation, intravenous, and other anesthetics.

**29-2012.00 Medical and Clinical Laboratory Technicians Entry – Mid level position assuming education and experience prerequisite**

Conducts quantitative and qualitative chemical analyses of body fluids, such as blood, urine, and spinal fluid. Conducts blood tests for transfusion purposes. Tests vaccines for sterility and virus inactivity. Draws blood from patient, observing principles of asepsis to obtain blood sample. Prepares standard volumetric solutions and reagents used in testing. Inoculates fertilized eggs, broths, or other bacteriological media with organisms. Incubates bacteria for specified period and prepares vaccines and serums by standard laboratory methods. Performs blood counts, using microscope.

**29-2021.00 Dental Hygienists Entry – Mid level position assuming education and experience prerequisite**

Cleans calcareous deposits, accretions, and stains from teeth and beneath margins of gums, using dental instruments. Provides clinical services and health education to improve and maintain oral health of school children. Removes excess cement from coronal surfaces of teeth. Places and removes rubber dams, matrices, and temporary restorations. Feels lymph nodes under patients' chin to detect swelling or tenderness that could indicate presence of oral cancer.



Examines gums, using probes, to locate periodontal recessed gums and signs of gum disease. Administers local anesthetic agents. Exposes and develops x-ray film. Removes sutures and dressings. Makes impressions for study casts. Places, carves, and finishes amalgam restorations. Feels and visually examines gums for sores and signs of disease. Charts conditions of decay and disease for diagnosis and treatment by dentist. Conducts dental health clinics for community groups to augment services of dentist. Applies fluorides and other cavity preventing agents to arrest dental decay.

**29-2034.02 Radiologic Technicians Entry – Mid level position assuming education and experience prerequisite**

Uses beam restrictive devices and patient shielding skills to minimize radiation exposure to patient and staff. Positions patient on examining table and adjusts equipment to obtain optimum view of specific body area requested by physician. Explains procedures to patient to reduce anxieties and obtain patient cooperation. Operates mobile x-ray equipment in operating room, emergency room, or at patient's bedside. Moves x-ray equipment into position and adjusts controls to set exposure factors, such as time and distance.

**29-2052.00 Pharmacy Technicians Entry – Mid level position assuming education and experience prerequisite**

Assists pharmacist to prepare and dispense medication. Prepares intravenous (IV) packs, using sterile technique, under supervision of hospital pharmacist. Counts stock and enters data in computer to maintain inventory records. Cleans equipment and sterilizes glassware according to prescribed methods. Mixes pharmaceutical preparations, fills bottles with prescribed tablets and capsules, and types labels for bottles. Receives and stores incoming supplies. Processes records of medication and equipment dispensed to hospital patient, computes charges, and enters data in computer.

**29-2054.00 Respiratory Therapy Technicians Entry – Mid level position assuming education and experience prerequisite**

Provide specific, well-defined respiratory care procedures under the direction of respiratory therapists and physicians.

**29-2056.00 Veterinary Technologists and Technicians Entry – Mid level position assuming education and experience prerequisite**

Perform medical tests in a laboratory environment for use in the treatment and diagnosis of diseases in animals. Prepare vaccines and serums for prevention of diseases. Prepare tissue samples, take blood samples, and execute laboratory tests, such as urinalysis and blood counts. Clean and sterilize instruments and materials and maintain equipment and machines.

**29-2071.00 Medical Records and Health Information Technicians Entry – Mid level position assuming education and experience prerequisite**

Compiles and maintains medical records of patients to document condition and treatment and to provide data for research studies. Maintains variety of health record indexes and storage and retrieval systems. Enters data, such as demographic characteristics, history and extent of disease, diagnostic procedures and treatment into computer. Prepares statistical reports, narrative reports and graphic presentations of tumor registry data for use by hospital staff, researchers, and other users. Contacts discharged patients, their families, and physicians to maintain registry with follow-up information, such as quality of life and length of survival of cancer patients. Assists in special studies or research, as needed. Reviews records for completeness and to abstract and code data, using standard classification systems, and to identify and compile patient data. Compiles medical care and census data for statistical reports on diseases treated, surgery performed, and use of hospital beds.

**29-2081.00 Opticians, Dispensing Entry – Mid level position assuming education and experience prerequisite**

Measures clients' bridge and eye size, temple length, vertex distance, papillary distance, and optical centers of eyes, using measuring devices. Verifies finished lenses are ground to specification. Recommends specific lenses, lens coatings, and frames to suit client needs. Heats, shapes, or bends plastic or metal frames to adjust eyeglasses to fit client, using pliers and hands. Assists client in selecting frames according to style and color, coordinating frames with facial and eye measurements and optical prescription. Grinds lens edges or applies coating to lenses. Instructs clients in adapting to wearing and caring for eyeglasses. Fabricates lenses to prescription specifications. Repairs damaged frames. Evaluates prescription in conjunction with client's vocational and avocational visual requirements. Determines client's current lens prescription, when necessary, using lensometer or lens analyzer and client's eyeglasses. Prepares work order and instructions for grinding lenses and fabricating eyeglasses.

**29-9012.00 Occupational Health and Safety Technicians Entry – Mid level position assuming education and experience prerequisite**

Collect data on work environments for analysis by occupational health and safety specialists. Implement and conduct evaluation of programs designed to limit chemical, physical, biological, and ergonomic risks to workers.

**29-9091.00 Athletic Trainers Entry – Mid level position assuming education and experience prerequisite**

Evaluates physical condition of athletes and advises or prescribes routine and corrective exercises to strengthen muscles. Administers emergency first aid, treats minor chronic disabilities, or refers injured person to physician. Recommends special diets to improve health, increase stamina, and reduce weight of athletes. Wraps ankles, fingers, wrists or other body parts with synthetic skin, gauze, or adhesive tape to support muscles and ligaments. Massages body parts to relieve soreness, strains, and bruises.

**31-9011.00 Massage Therapists Entry – Mid level position assuming education and experience prerequisite**

Massage customers for hygienic or remedial purposes.

**31-9091.00 Dental Assistants Entry – Mid level position assuming education and experience prerequisite**

Prepares patient, sterilizes and disinfects instruments, sets up instrument trays, prepares materials, and assists dentist during dental procedures. Takes and records medical and dental histories and vital signs of patients. Assists dentist in management of medical and dental emergencies. Records treatment information in patient records. Provides postoperative instructions prescribed by dentist. Pours, trims, and polishes study casts. Instructs patients in oral hygiene and plaque control programs. Cleans teeth, using dental instruments. Fabricates temporary restorations and custom impressions form preliminary impressions. Schedules appointments, prepares bills and receives payment for dental services, completes insurance forms, and maintains records, manually or using computer. Cleans and polishes removable appliances. Makes preliminary impressions for study casts and occlusal registrations for mounting study casts. Applies protective coating of fluoride to teeth. Exposes dental diagnostic x-rays.

**31-9093.00 Medical Equipment Preparers Entry – Mid level position assuming education and experience prerequisite**

Examines equipment to detect leaks, worn or loose parts, or other indications of disrepair. Delivers equipment to specified hospital location or to patient's private residence. Maintains inventory and equipment usage records. Connects equipment to water source and flushes water through system to purge equipment of wastes. Disinfects, and sterilizes equipment, such as respirators, hospital beds, and wheelchairs, and oxygen and dialysis equipment, using cleansing and sterilizing solutions. Installs and sets up equipment, using hand tools. Starts equipment and observes gauges and equipment operation to detect malfunctions and assure equipment is operating to prescribed standards.

**31-9096.00 Veterinary Assistants and Laboratory Animal Caretakers Entry – Mid level position assuming education and experience prerequisite**

Assists veterinarian in variety of animal health care duties, including injections, venipunctures, and wound dressings. Completes routine laboratory tests and cares for and feeds laboratory animals. Inspects products or carcasses to ensure compliance with health standards, when employed in food processing plant. Assists professional personnel with research projects in commercial, public health, or research laboratories. Assists veterinarian during surgical procedures, passing instruments and materials in accordance with oral instructions. Prepares examination or treatment room, and holds or restrains animal during procedures. Prepares patient, medications, equipment, and instruments for surgical procedures, using specialized knowledge.

**33-2011.01 Municipal Fire Fighters Entry – Mid level position assuming education and experience prerequisite**

Positions and climbs ladders to gain access to upper levels of buildings, or to rescue individuals from burning structures. Protects property from water and smoke, using waterproof salvage covers, smoke ejectors, and deodorants. Creates openings in buildings for ventilation or entrance, using ax, chisel, crowbar, electric saw, or core cutter. Selects hose nozzle, depending on type of fire, and directs stream of water or chemicals onto fire. Administers first aid and cardiopulmonary resuscitation to injured persons and those overcome by fire and smoke. Responds to fire alarms and other emergency calls. Sprays foam onto runway, extinguishes fire, and rescues aircraft crew and passengers in air-crash emergency. Inspects buildings for fire hazards and compliance with fire prevention ordinances. Participates in courses in hydraulics, pump operation, and fire-fighting techniques. Participates in fire drills and demonstrations of fire-fighting techniques. Maintains fire-fighting equipment and apparatus, vehicles, hydrants, and fire station. Drives and operates fire fighting vehicles and equipment. Establishes fire lines to prevent unauthorized persons from entering area. Assesses fire and situation, reports to superior, and receives instructions, using two-way radio.

**33-2011.02 Forest Fire Fighters Entry – Mid level position assuming education and experience prerequisite**

Fells trees, cuts and clears brush, and digs trenches, to contain fire, using ax, chain saw, or shovel. Packs parachutes.

Parachutes from aircraft and guides direction of fall toward clear landing area near scene of fire. Orients self in relation to fire, using compass and map, and collects supplies and equipment dropped by parachute. Works as member of fire fighting crew. Patrols burned area after fire to watch for hot spots that may restart fire. Ascertains best method for attacking fire, and communicates plan to airplane or base camp, using two-way radio. Extinguishes flames and embers to suppress fire, using shovel, or engine or hand-driven water or chemical pumps.

**33-2021.01 Fire Inspectors Mid – Senior level position assuming education and experience prerequisite**

Inspects interiors and exteriors of buildings to detect hazardous conditions or violations of fire codes. Issues permits and summons, and enforces fire codes. Tests equipment, such as gasoline storage tanks, air compressors, and fire extinguishing and fire protection equipment to endure conformance to fire and safety codes. Discusses violations and unsafe conditions with facility representative, makes recommendations, and instructs in fire safety practices. Prepares reports, such as inspections performed, code violations, and recommendations for eliminating fire hazards. Gives First aid in emergencies. Collects fees for permits and licenses.

**33-2022.00 Forest Fire Inspectors and Prevention Specialists Mid – Senior level position assuming education and experience prerequisite**

Inspects forest tracts and logging areas for fire hazards, such as accumulated wastes, mishandling of combustibles, or defective exhaust systems. Locates forest fires on area map, using azimuth sighter and known landmarks. Relays messages relative to emergencies, accidents, location of crew and personnel, weather forecasts, and fire hazard conditions. Patrols and maintains surveillance, looking for forest fires, hazardous conditions, and weather phenomena. Inspects campsites to ensure camper compliance with forest use regulations. Estimates size and characteristics of fire and reports findings to base camp by radio or telephone. Gives directives and instructions regarding sanitation, fire prevention, violation corrections, and related forest regulations. Examines and inventories firefighting equipment, such as axes, fire hoses, shovels, pumps, buckets, and fire extinguishers to determine amount and condition. Gives directions to crew on fire line during forest fire. Extinguishes smaller fires with portable extinguisher, shovel, and ax. Maintains records and logbooks. Directs maintenance and repair of firefighting equipment and requisitions new equipment. Restricts public access and recreational use of forestlands during critical fire season. Observes instruments and reports meteorological data, such as temperature, relative humidity, wind direction and velocity, and types of cloud formations.

**33-3011.00 Bailiffs Mid – Senior level position assuming education and experience prerequisite**

Maintains order in courtroom during trial and guards jury from outside contact. Checks courtroom for security and cleanliness and assures availability of sundry supplies for use of judge. Provides jury escort to restaurant and other areas outside of courtroom to prevent jury contact with public. Reports need for police or medical assistance to sheriff's office. Guards lodging of sequestered jury. Enforces courtroom rules of behavior and warns persons not to smoke or disturb court procedure. Announces entrance of judge. Stops people from entering courtroom while judge charges jury. Collects and retains unauthorized firearms from persons entering courtroom.

**33-3012.00 Correctional Officers and Jailers Entry – Mid – Senior level position assuming education and experience prerequisite**

Monitors conduct of prisoners, according to established policies, regulations, and procedures, to prevent escape or violence. Records information, such as prisoner identification, charges, and incidences of inmate disturbance. Guards facility entrance to screen visitors. Serves meals and distributes commissary items to prisoners. Takes prisoner into custody and escorts to locations within and outside of facility, such as visiting room, courtroom, or airport. Inspects locks, window bars, grills, doors, and gates at correctional facility, to prevent escape. Uses weapons, handcuffs, and physical force to maintain discipline and order among prisoners. Searches prisoners, cells, and vehicles for weapons, valuables, or drugs.

**33-3021.05 Immigration and Customs Inspectors Mid – Senior level position assuming education and experience prerequisite**

Inspects cargo, baggage, personal articles, and common carriers entering or leaving U.S. for compliance with revenue laws and U.S. Customs Service regulations. Reviews private and public records and documents to establish, assemble, and verify facts and secure legal evidence. Interprets and explains laws and regulations to others. Institutes civil and criminal prosecutions and assists other governmental agencies with regulation violation issues. Issues or denies permits. Testifies in administrative and judicial proceedings. Collects samples of merchandise for examination, appraising, or testing and requests laboratory analyses. Determines duty and taxes to be paid, investigates applications for duty refunds, or petitions for remission or mitigation of penalties. Keeps records and writes reports of activities, findings, transactions, violations, discrepancies, and decisions. Examines, classifies, weighs, measures, and appraises merchandise to enforce regulations of U.S. Customs Service and prevent illegal importing and exporting. Determines investigative and seizure

techniques to be used, and seizes contraband, undeclared merchandise, vehicles, and air or sea craft carrying smuggled merchandise. Arrests, detains, paroles, or arranges for deportation of persons in violation of customs or immigration laws. Examines visas and passports and interviews persons to determine eligibility for admission, residence, and travel in U.S.

**33-3031.00 Fish and Game Wardens Entry – Mid – Senior level position assuming education and experience prerequisite**

Patrols assigned area by car, boat, airplane, horse, or on foot to observe persons engaged in taking fish and game. Addresses schools and civic groups to disseminate wildlife information and promote public relations. Photographs extent of damage, documents other evidence, estimates financial loss, and recommends compensation. Traps beavers, dynamites beaver dams, and tranquilizes animals to implement approved control measures. Assists in promoting hunter safety training. Recommends revisions or changes in hunting and trapping regulations or seasons, animal relocation and release to obtain balance of wildlife and habitat. Resurveys area and totals bag counts of hunters to determine effectiveness of control measures. Seizes equipment used in fish and game law violations and arranges for disposition of fish and game illegally taken or possessed. Serves warrants, makes arrests, and prepares and presents evidence in court actions. Searches area of reported property damage for animal tracks, leavings, and other evidence to identify specie of animal responsible. Collects and reports information on population and condition of fish and wildlife in their habitat, availability of game food and cover, and suspected pollution. Investigates hunting accidents and reports of fish and game law violations, issues warnings or citations, and files reports. Ensures method and equipment used are lawful and apprehends violators.

**33-3041.00 Parking Enforcement Workers Entry – Mid level position assuming education and experience prerequisite**

Chalks tires of vehicles, records time, and returns at specific intervals. Collects coins deposited in meters. Writes violation tickets for illegally parked vehicles. Prepares required forms and records. Reports missing traffic signals or signs to superior at end of shift. Winds parking meter clocks.

**33-3051.01 Police Patrol Officers Entry – Mid level position assuming education and experience prerequisite**

Patrols specific area on foot, horseback, or motorized conveyance. Relays complaint and emergency-request information to appropriate agency dispatcher. Provides road information to assist motorists. Investigates traffic accidents and other accidents to determine causes and to determine if crime has been committed. Evaluates complaint and emergency-request information to determine response requirements. Reviews facts to determine if criminal act or statute violation is involved. Directs traffic flow and reroutes traffic in case of emergencies. Monitors traffic to ensure motorists observe traffic regulations and exhibit safe driving procedures. Arrests perpetrator of criminal act or submits citation or warning to violator of motor vehicle ordinance. Draws diagram of crime or accident scene. Photographs crime or accident scene. Interviews principal and eyewitnesses. Renders aid to accident victims and other persons requiring first aid for physical injuries. Records facts and prepares reports to document activities. Testifies in court to present evidence or act as witness in traffic and criminal cases. Expedites processing of prisoners, and prepares and maintains records of prisoner bookings and prisoner status during booking and pre-trial process. Maintains order, responds to emergencies, protects people and property, and enforces motor vehicle and criminal law.

**33-3051.03 Sheriffs and Deputy Sheriffs Entry – Mid – Senior level position assuming education and experience prerequisite**

Serves subpoenas and summonses. Executes arrest warrants, locating and taking persons into custody and issues citations. Transports or escorts prisoners or defendants between courtroom, prison, or jail, District Attorney's offices, or medical facilities. Investigates illegal or suspicious activities of persons. Patrols and guards courthouse, grand jury room, or assigned areas to provide security, enforce laws, maintain order, and arrest violators. Maintains records and submits reports of dispositions and logs daily activities. Arranges delivery of prisoner's arrest records from criminal investigation unit, at District Attorney's request. Notifies patrol units to take violators into custody, or provide needed assistance or medical aid. Questions individuals entering secured areas to determine purpose of business and directs or reroutes individuals to destinations. Confiscates real or personal property by court order, and posts notices in public places. Takes control of accident scene to maintain traffic flow, assist accident victims, and investigate causes.

**33-3052.00 Transit and Railroad Police Entry – Mid – Senior level position assuming education and experience prerequisite**

Directs security activities at derailments, fires, floods, and strikes involving railroad property. Prepares reports documenting the results and activities concerned with investigations. Plans and implements special safety and preventive programs, such as fire and accident prevention. Seals empty boxcars by twisting nails in door hasps, using nail twister. Directs and coordinates the daily activities and training of security staff. Records and verifies seal numbers from boxcars containing high pilferage items, such as cigarettes and liquor, to detect tampering. Interviews neighbors, associates, and former employers of job applicants to verify personal references and obtain work history data. Examines credentials of unauthorized persons attempting to enter secured areas. Guards, patrols, and polices railroad yards, cars, stations, and other facilities to protect company property and shipments and to maintain order. Investigates or directs investigations of freight theft, suspicious damage or loss of passenger's valuables, and other crimes on railroad property. Apprehends or coordinates with local enforcement personnel to apprehend or remove trespassers or thieves from rail property.

**33-9031.00 Gaming Surveillance Officers and Gaming Investigators Entry – Mid – Senior level position assuming education and experience prerequisite**

Act as oversight and security agent for management and customers. Observe casino or casino hotel operation for irregular activities such as cheating or theft by either employees or patrons. May utilize one-way mirrors above the casino floor, cashier's cage, and from desk. Use of audio/video equipment is also common to observe operation of business. Usually required to provide verbal and written reports of all violations and suspicious behavior to supervisor.

**33-9032.00 Security Guards Entry – Mid level position assuming education and experience prerequisite**

Patrols industrial and commercial premises to prevent and detect signs of intrusion and ensure security of doors, windows, and gates. Warns persons of rule infractions or violations, and apprehends or evicts violators from premises, using force when necessary. Calls police or fire departments in cases of emergency, such as fire or presence of unauthorized persons. Operates detecting devices to screen individuals and prevent passage of prohibited articles into restricted areas. Answers telephone calls to take messages, answer questions, and provide information during non-business hours or when switchboard is closed. Escorts or drives motor vehicle to transport individuals to specified location and to provide personal protection. Circulates among visitors, patrons, and employees to preserve order and protect property. Answers alarms and investigates disturbances. Monitors and authorizes entrance and departure of employees, visitors, and other persons to guard against theft and maintain security of premises. Inspects and adjusts security systems, equipment, and machinery to ensure operational use and to detect evidence of tampering.

**33-9091.00 Crossing Guards Entry – Mid level position assuming education and experience prerequisite**

Directs actions of pedestrians and traffic at intersections. Activates warning signal lights, lowers crossing gates until train passes, and raises gate when crossing is clear. Distributes traffic control and caution signs and markers at designated points. Directs movement of traffic through site, using signs, flags, and hand signals. Escorts pedestrians across street. Waves flags, signs, or lanterns in emergencies. Discusses traffic routing plans, and type and location of control points with superior. Informs drivers of detour routes through construction sites. Records license numbers of vehicles disregarding traffic signals and reports infractions to police.

**35-2012.00 Cooks, Institution and Cafeteria Entry – Mid level position assuming education and experience prerequisite**

Cooks foodstuffs according to menu, special dietary or nutritional restrictions, and number of persons to be served. Cleans, cuts, and cooks meat, fish, and poultry. Requisitions food supplies, kitchen equipment and appliances, and other supplies and receives deliveries. Apportions and serves food to residents, employees, or patrons. Washes pots, pans, dishes, utensils, and other cooking equipment. Directs activities of one or more workers who assist in preparing and serving meals. Compiles and maintains food cost records and accounts. Plans menus, taking advantage of foods in season and local availability. Bakes breads, rolls, and other pastries. Prepares and cooks vegetables, salads, dressings, and desserts. Cleans and inspects galley equipment, kitchen appliances, and work areas for cleanliness and functional operation.

**35-2014.00 Cooks, Restaurant Entry – Mid level position assuming education and experience prerequisite**

Weighs, measures, and mixes ingredients according to recipe or personal judgment, using various kitchen utensils and equipment. Seasons and cooks food according to recipes or personal judgment and experience. Regulates temperature of ovens, broilers, grills, and roasters.

Observes and tests food to determine that it is cooked, by tasting, smelling, or piercing, and turns or stirs food if necessary. Bakes, roasts, broils, and steams meats, fish, vegetables, and other foods. Bakes bread, rolls, cakes, and pastry. Washes, peels, cuts, and seeds fruits and vegetables to prepare fruits and vegetables for use. Inspects food preparation and serving areas to ensure observance of safe, sanitary food-handling practices. Estimates food consumption and requisitions or purchases supplies, or procures food from storage. Butchers and dresses animals, fowl



## JOB TITLES AND ASSOCIATED TASKS Sorted by Cognofile

or shellfish, or cuts and bones meat prior to cooking. Carves and trims meats, such as beef, veal, ham, pork, and lamb for hot or cold service, or for sandwiches. Plans items on menu. Portions, arranges, and garnishes food, and serves food to waiter or patron.

### **35-2021.00 Food Preparation Workers Entry – Mid level position assuming education and experience prerequisite**

Cleans and portions, and cuts or peels various foods to prepare for cooking or serving. Cleans, cuts, slices, or disjoints meats and poultry to prepare for cooking. Prepares and serves variety of beverages, such as coffee, tea, and soft drinks. Portions and arranges food on serving dishes, trays, carts, or conveyor belts. Prepares variety of foods according to customers' orders or instructions of superior, following approved procedures. Carries food supplies, equipment, and utensils to and from storage and work areas. Distributes food to waiters and waitresses to serve to customers. Stores food in designated containers and storage areas to prevent spoilage. Butchers and cleans fowl, fish, poultry, and shellfish to prepare for cooking or serving. Requisitions, stores, and distributes food supplies, equipment, and utensils. Cleans and maintains work areas, equipment, and utensils.

### **35-3011.00 Bartenders Entry – Mid level position assuming education and experience prerequisite**

Mixes ingredients, such as liquor, soda, water, sugar, and bitters, to prepare cocktails and other drinks. Collects money for drinks served. Serves wine and draft or bottled beer. Arranges bottles and glasses to make attractive display. Orders or requisitions liquors and supplies. Prepares appetizers, such as pickles, cheese, and cold meats. Cleans glasses, utensils, and bar equipment. Slices and pits fruit for garnishing drinks.

### **35-3021.00 Combined Food Preparation and Serving Workers, Including Fast Food Entry – Mid level position assuming education and experience prerequisite**

Selects food items from serving or storage areas and places food and beverage items on serving tray or in takeout bag. Cooks or re-heats food items, such as french fries. Receives payment. Notifies kitchen personnel of shortages or special orders. Requests and records customer order and computes bill. Makes and serves hot and cold beverages or desserts.

### **35-9021.00 Dishwashers Entry level position assuming education and experience prerequisite**

Cleans and maintains work areas, equipment, and utensils. Carries or transfers by hand truck supplies and equipment between storage and work areas. Removes garbage and trash and places refuse in designated pick up area. Stocks serving stations with food and utensils. Loads or unloads trucks used in delivering or picking up food and supplies. Sets up banquet tables. Cleans and prepares various foods for cooking or serving. Prepares and packages individual place settings.

### **37-2011.00 Janitors and Cleaners, Except Maids and Housekeeping Cleaners Entry – Mid level position assuming education and experience prerequisite**

Sweeps, mops, scrubs, and vacuums floors of buildings, using cleaning solutions, tools and equipment. Gathers and empties trash. Cleans or polishes walls, ceilings, windows, plant equipment and building fixtures, using steam cleaning equipment, scrapers, brooms and variety of hand and power tools. Applies waxes or sealers to wood or concrete floors. Tends, cleans, adjusts and services furnaces, air conditioners, boilers and other building heating and cooling systems. Removes snow from sidewalks, driveways, and parking areas, using snowplow, snow blower, and snow shovel, and spreads snow melting chemicals. Notifies management personnel concerning need for major repairs or additions to building operating systems. Sprays insecticides and fumigants to prevent insect and rodent infestation. Cleans laboratory equipment, such as glassware and metal instruments, using solvents, brushes, rags, and power cleaning equipment. Mows and trims lawns and shrubbery, using mowers and hand and power trimmers, and clears debris from grounds. Mixes water and detergents or acids in container to prepare cleaning solutions, according to specifications. Drives vehicles, such as van, industrial truck or industrial vacuum cleaner. Cleans chimneys, flues, and connecting pipes, using power and hand tools. Cleans and restores building interiors damaged by fire, smoke, or water, using commercial cleaning equipment. Services and repairs cleaning and maintenance equipment and machinery and performs minor routine painting, plumbing, electrical, and related activities. Moves items between departments, manually or using hand truck. Sets up, arranges, and removes decorations, tables, chairs, ladders, and scaffolding, for events such as banquets and social functions. Requisitions supplies and equipment used in cleaning and maintenance duties. Dusts furniture, walls, machines, and equipment.

### **37-2012.00 Maids and Housekeeping Cleaners Entry – Mid level position assuming education and experience prerequisite**

Cleans rooms, hallways, lobbies, lounges, restrooms, corridors, elevators, stairways, and locker rooms and other work areas. Cleans rugs, carpets, upholstered furniture, and draperies, using vacuum cleaner. Dusts furniture and equipment. Empties wastebaskets, and empties and cleans ashtrays. Collects soiled linens for laundering, and receives and stores linen supplies in linen closet. Washes walls, ceiling, and woodwork. Polishes metalwork, such as fixtures and fittings. Prepares sample rooms for sales meetings. Cleans and removes debris from driveway and garage areas. Arranges decorations, apparatus, or furniture for banquets and social functions. Replaces light bulbs. Washes beds and mattresses, and remakes beds after dismissal of hospital patients. Moves and arranges furniture, turns mattresses, hangs draperies, dusts venetian blinds, and polishes metalwork to ready hotel facilities for occupancy. Replenishes supplies, such as drinking glasses, writing supplies, and bathroom items. Transports trash and waste to disposal area. Cleans swimming pool with vacuum. Delivers television sets, ironing boards, baby cribs, and rollaway beds to guest's rooms. Washes windows, door panels, and sills. Sweeps, scrubs, waxes, and polishes floors, using brooms and mops and powered scrubbing and waxing machines.

**37-2021.00 Pest Control Workers Entry – Mid level position assuming education and experience prerequisite**

Sprays or dusts chemical solutions, powders, or gases into rooms, onto clothing, furnishings or wood, and over marshlands, ditches, catch-basins. Sets mechanical traps and places poisonous paste or bait in sewers, burrows, and ditches. Cuts or bores openings in building or surrounding concrete, accesses infested areas, inserts nozzle, and injects pesticide to impregnate ground. Directs and/or assists other workers in treatment and extermination processes to eliminate and control rodents, insects, and weeds. Studies preliminary reports and diagrams of infested area and determines treatment type required to eliminate and prevent recurrence of infestation. Digs up and burns or sprays weeds with herbicides. Cleans work site after completion of job. Records work activities performed. Drives truck equipped with power spraying equipment.

Posts warning signs and locks building doors to secure area to be fumigated. Positions and fastens edges of tarpaulins over building and tapes vents to ensure air-tight environment and checks for leaks. Cleans and removes blockages from infested areas to facilitate spraying procedure and provide drainage, using broom, mop, shovel, and rake. Measures area dimensions requiring treatment, using rule, calculates fumigant requirements, and estimates cost for service. Inspects premises to identify infestation source and extent of damage to property, wall, and roof porosity, and access to infested locations.

**37-3011.00 Landscaping and Grounds Keeping Workers Entry – Mid level position assuming education and experience prerequisite**

Mows lawns, using power mower. Digs holes for plants, mixes fertilizer or lime with dirt in holes, inserts plants, and fills holes with dirt. Trims and picks flowers and cleans flowerbeds. Hauls or spreads topsoil, and spreads straw over seeded soil to hold soil in place. Decorates garden with stones and plants. Attaches wires from planted trees to support stakes. Maintains tools and equipment. Seeds and fertilizes lawns. Shovels snow from walks and driveways. Builds forms and mixes and pours cement to form garden borders.

Applies herbicides, fungicides, fertilizers, and pesticides, using spreaders or spray equipment. Waters lawns, trees, and plants, using portable sprinkler system, hose, or watering can.

**37-3012.00 Pesticide Handlers, Sprayers, and Applicators, Vegetation Entry – Mid level position assuming education and experience prerequisite**

Lifts, pushes, and swings nozzle, hose, and tube to direct spray over designated area. Covers area to specified depth, applying knowledge of weather conditions, droplet size, elevation-to- distance ratio, and obstructions. Fills sprayer tank with water and chemicals, according to formula. Starts motor and engages machinery, such as sprayer agitator and pump. Cleans and services machinery to ensure operating efficiency, using water, gasoline, lubricants, and hand tools.

Plants grass with seed spreader and operates straw blower to cover seeded area with asphalt and straw mixture. Sprays livestock with pesticides. Gives driving instructions to truck driver, using hand and horn signals, to ensure complete coverage of designated area. Connects hoses and nozzles, selected according to terrain, distribution pattern requirements, type of infestation, and velocity.

**37-3013.00 Tree Trimmers and Pruners Entry – Mid – Senior level position assuming education and experience prerequisite**

Cuts away dead and excess branches from trees, using handsaws, pruning hooks, sheers, and clippers. Applies tar or other protective substances to cut surfaces to seal surfaces against insects. Scrapes decayed matter from cavities in trees and fills holes with cement to promote healing and to prevent further deterioration. Uses truck-mounted hydraulic lifts and pruners and power pruners. Prunes, cuts down, fertilizes, and sprays trees as directed by tree surgeon. Climbs trees, using climbing hooks and belts, or climbs ladders to gain access to work area.

**39-2011.00 Animal Trainers Entry – Mid – Senior level position assuming education and experience prerequisite**

Trains animals to protect property, compete in shows or races, obey commands, or perform tricks to entertain audience. Evaluates animal to determine temperament, ability, and aptitude for training. Trains guard dog to protect property and teaches guide dog its master to function as team. Cues or signals animal during performance. Arranges for mating of stallions and mares, and assists mares during foaling. Feeds, exercises, and gives general care to animal. Observes animal's physical condition to detect illness or unhealthy condition requiring medical care. Trains horses as independent operator and advises owners regarding purchase of horses. Rehearses animal according to script for motion picture or television film or stage or circus program. Conducts training program to develop desired behavior. Trains horses for riding, show, work, or racing.

**39-2021.00 Non-farm Animal Caretakers Entry – Mid – Senior level position assuming education and experience prerequisite**

Feeds and waters animal according to schedules and feeding instructions. Repairs fences, cages or pens. Installs equipment in animal care facility, such as infrared lights, feeding devices, or cribs. Observes and cautions children petting and feeding animals in designated area. Responds to questions from patrons and provides information about animals, such as behavior, habitat, breeding habits, or facility activities. Saddles and shoes animals. Orders, unloads, and stores feed and supplies. Records information about animals, such as weight, size, physical condition, diet, medications, and food intake. Transfers animals between enclosures for breeding, birthing, shipping, or rearranging exhibits. Anesthetizes and inoculates animals, according to instructions. Cleans and disinfects animal quarters, such as pens, stables, cages, and yards, and surgical or other equipment, such as saddles and bridles. Washes, brushes, clips, trims, and grooms animals. Exercises animals to maintain their fitness and health, or trains animals to perform certain tasks. Adjusts controls to regulate specified temperature and humidity of animal quarters, nursery, or exhibit area. Mixes food, liquid formulas, medications, or food supplements according to instructions, prescriptions, and knowledge of animal species. Examines and observes animals for signs of illness, disease, or injury and provides treatment or informs veterinarian.

**39-3092.00 Costume Attendants Entry – Mid – Senior level position assuming education and experience prerequisite**

Inventories stock to determine types and condition of costuming available and selects costumes based on historical analysis and studies. Studies books, pictures, and examples of period clothing to determine styles worn during specific period in history. Designs and constructs costume or sends it to tailor for construction or major repairs and alterations. Purchases or rents costumes and other wardrobe accessories from vendor. Assists cast in donning costumes or assigns cast dresser to assist specific cast members with costume changes. Arranges or directs cast dresser to arrange costumes on clothing racks in sequence of appearance. Examines costume fit on cast member, and sketches or writes notes for alterations. Analyzes or reviews analysis of script to determine locale of story, period, number of characters, and costumes required per character. Repairs, alters, cleans, presses, and refits costume prior to performance and cleans and stores costume following performance.

**39-4011.00 Embalmers Entry – Mid – Senior level position assuming education and experience prerequisite**

Packs body orifices with cotton saturated with embalming fluid to prevent escape of gases or waste matter. Applies cosmetics to impart lifelike appearance. Reshapes or reconstructs disfigured or maimed bodies, using materials such as clay, cotton, plaster of paris, and wax. Dresses and places body in casket. Maintains records, such as itemized list of clothing or valuables delivered with body and names of persons embalmed. Inserts convex celluloid or cotton between eyeball and eyelid to prevent slipping and sinking of eyelid. Washes and dries body, using germicidal soap and towels or hot air drier. Joins lips, using needle and thread or wire. Presses diaphragm to evacuate air from lungs. Makes incision in arm or thigh and drains blood from circulatory system and replaces blood with embalming fluid, using pump. Incises stomach and abdominal walls and probes internal organs, using trocar, to withdraw blood and waste matter from organs. Attaches trocar to pump-tube, starts pump, and repeats probing to force embalming fluid into organs. Closes incisions, using needle and suture.

**39-5011.00 Barbers Entry – Mid – Senior level position assuming education and experience prerequisite**

Cuts, shapes, trims, and tapers hair, using clippers, comb, blowout gun, and scissors. Drapes and pins protective cloth around customer's shoulders. Orders supplies. Records service on ticket or receives payment. Cleans work area and work tools. Sells lotions, tonics, or other cosmetic supplies. Applies lather and shaves beard or shapes hair contour (outline) on temple and neck, using razor. Performs other tonsorial services, such as applying hairdressings or lotions, dyeing, shampooing, singeing, or styling hair, and massaging face, neck, or scalp. Questions patron regarding services and style of haircut desired.





## JOB TITLES AND ASSOCIATED TASKS Sorted by Cognofile

### **39-5012.00 Hairdresser, Hairstylists, and Cosmetologists Entry – Mid – Senior level position assuming education and experience prerequisite**

Cuts, trims and shapes hair or hairpieces, using clippers, scissors, trimmers and razors. Attaches wig or hairpiece to model head and dresses wigs and hairpieces according to instructions, samples, sketches or photographs. Massages and treats scalp for hygienic and remedial purposes, using hands, fingers, or vibrating equipment. Analyzes patron's hair and other physical features or reads makeup instructions to determine and recommend beauty treatment. Updates and maintains customer information records, such as beauty services provided. Cleans, shapes, and polishes fingernails and toenails using files and nail polish. Shapes and colors eyebrows or eyelashes and removes facial hair, using depilatory cream and tweezers. Recommends and applies cosmetics, lotions, and creams to patron to soften and lubricate skin and enhance and restore natural appearance. Administers therapeutic medication and advises patron to seek medical treatment for chronic or contagious scalp conditions. Combs, brushes, and sprays hair or wigs to set style. Shampoos, rinses, and dries hair and scalp or hairpieces with water, liquid soap, or other solutions. Bleaches, dyes, or tints hair, using applicator or brush. Applies water, setting or waving solutions to hair and winds hair in curlers or rollers.

### **39-5092.00 Manicurists and Pedicurists Entry – Mid – Senior level position assuming education and experience prerequisite**

Removes previously applied nail polish, using liquid remover and swabs. Shapes and smoothes ends of nails, using scissors, files, and emery boards. Applies clear or colored liquid polish onto nails with brush. Roughens surfaces of fingernails, using abrasive wheel. Attaches paper forms to tips of customer's fingers to support and shape artificial nails. Softens nail cuticles with water and oil, pushes back cuticles, using cuticle knife, and trims cuticles, using scissors or nippers. Whitens underside of nails with white paste or pencil. Removes paper forms and shapes and smoothes edges of nails, using rotary abrasive wheel. Brushes coats of powder and solvent onto nails and paper forms with hand brush to maintain nail appearance and to extend nails to desired length. Polishes nails, using powdered polish and buffer. Forms artificial fingernails on customer's fingers. Cleans customer's nails in soapy water, using swabs, files, and orange sticks.

### **39-5093.00 Shampoos Entry – Mid level position assuming education and experience prerequisite**

Shampoo and rinse customer's hair.

### **39-5094.00 Skin Care Specialists Entry – Mid level position assuming education and experience prerequisite**

Provide skin care treatments to face and body to enhance an individual's appearance.

### **39-6011.00 Baggage Porters and Bellhops Entry level position assuming education and experience prerequisite**

Delivers, carries, or transfers luggage, trunks, and packages to/from rooms, loading areas, vehicles, or transportation terminals. Supplies guests or travelers with directions, travel information, and other information, such as available services and points of interest. Inspects guest's room and explains features, such as night lock and operation of television. Computes and completes charge slips for services rendered and maintains records. Transports guests about premises and local area, or calls taxicabs. Weighs and bills baggage and parcels for shipment, and arranges for freight to be shipped. Completes and attaches baggage claim checks and completes baggage insurance forms. Runs errands for guests. Arranges for clothing of hotel guests to be cleaned, laundered, or repaired. Pages guests in hotel lobby, dining room, or other areas, delivers messages and room service orders. Escorts incoming hotel guests to their rooms. Sets up display tables, racks, or shelves, and arranges merchandise display for sales personnel.

### **39-6032.00 Transportation Attendants, Except Flight Attendants and Baggage Porters Entry level position assuming education and experience prerequisite**

Greets passengers boarding mode of transportation and announces stops. Responds to passengers' questions, requests, or complaints. Mails letters or arranges for dispatch of telegrams to assist passengers. Carries baggage to assigned rooms or to station platform. Cleans rooms and bathroom facilities, changes linens, and replenishes supplies to washroom. Inspects kitchen and dining area to ensure adherence to sanitation requirements. Signals transportation operator to stop or proceed, opens and closes doors, and establishes order among passengers. Counts and verifies tickets and seat reservations, and records number of passengers boarding and leaving mode of transportation. Issues and collects passenger boarding passes and transfers and tears or punches tickets to prevent reuse. Distributes sports and game equipment, magazines, newspapers, pillows, blankets, and other items to passengers and guests. Demonstrates safety procedures. Provides seating arrangements, and straightens and adjusts window shades and seat cushions to accommodate requests of passengers. Serves snacks, lunch, and refreshments.

**39-9021.00 Personal and Home Care Aides Entry – Mid level position assuming education and experience prerequisite**

Advises and assists family members in planning nutritious meals, purchasing and preparing foods, and utilizing commodities from surplus food programs. Explains fundamental hygiene principles. Assists in training children. Gives bedside care to incapacitated individuals and trains family members to provide bedside care. Assigns housekeeping duties according to children's capabilities. Obtains information for client, for personal and business purposes. Types correspondence and reports. Drives motor vehicle to transport client to specified locations. Assists parents in establishing good study habits for children. Assists client with dressing, undressing, and toilet activities. Prepares and maintains records of assistance rendered. Evaluates needs of individuals served and plans for continuing services.

**41-2011.00 Cashiers Entry – Mid level position assuming education and experience prerequisite**

Receives sales slip, cash, check, voucher, or charge payments and issues receipts, refunds, credits, or change due to customer. Cashes checks. Operates cash register or electronic scanner. Computes and records totals of transactions. Keeps periodic balance sheet of amount and number of transactions. Sorts, counts, and wraps currency and coins. Sells tickets and other items to customer. Monitors checkout stations, issues and removes cash as needed, and assigns workers to reduce customer delay. Resolves customer's complaints. Compiles and maintains non-monetary reports and records. Bags, boxes, or wraps merchandise. Answers questions and provides information to customers. Learns prices, stocks shelves, marks prices, weighs items, issues trading stamps, and redeems food stamps and coupons.

**41-2012.00 Gaming Change Persons and Booth Cashiers Entry – Mid level position assuming education and experience prerequisite**

Exchange coins and tokens for patrons' money. May issue payoffs and obtain customer's signature on receipt when winnings exceed the amount held in the slot machine. May operate a booth in the slot machine area and furnish change persons with money bank at the start of the shift, or count and audit money in drawers.

**41-2022.00 Parts Salespersons Entry – Mid – Senior level position assuming education and experience prerequisite**

Determines replacement part required, according to inspection of old part, customer request, or customer description of malfunction. Advises customer on substitution or modification of part when identical replacement is not available. Reads catalog, microfiche viewer, or computer display to determine replacement part stock number and price. Fills customer orders from stock. Examines returned part for defects, and exchanges defective part or refunds money. Receives payment or obtains credit authorization. Prepares sales slip or sales contract. Repairs parts or equipment. Takes inventory of stock. Marks and stores parts in stockroom according to prearranged system. Places new merchandise on display. Measures parts, using precision measuring instruments to determine whether similar parts may be machined to required size. Discusses use and features of various parts, based on knowledge of machine or equipment. Demonstrates equipment to customer and explains functioning of equipment. Receives and fills telephone orders for parts.

**43-4041.02 Credit Checkers Entry – Mid level position assuming education and experience prerequisite**

Interviews credit applicant by telephone or in person to obtain financial and personal data for credit report. Contacts former employers and other acquaintances to verify references, employment, health history, and social behavior. Obtains information from banks, credit bureaus, and other credit services and provides reciprocal information if requested. Compiles and analyzes credit information gathered by investigation. Telephones subscriber to relay requested information or sends subscriber credit report. Prepares reports of findings and recommendations, using typewriter or computer. Examines city directories and public records to verify residence property ownership, bankruptcies, liens, arrest record, or unpaid taxes of applicant.

**43-4151.00 Order Clerks Entry – Mid level position assuming education and experience prerequisite**

Receives and handles customer complaints. Routes or relays orders to specified department or unit to prepare and ship orders to designated locations. Confers with production, sales, shipping, warehouse, or common carrier personnel to expedite or trace merchandise or delayed shipments. Computes total charge for merchandise or services and shipping charges. Recommends merchandise or services to customer. Attempts to sell additional merchandise or service to prospective or current customers by phone or through visits. Recommends type of packing or labeling needed on order. Inspects outgoing work for compliance with customer's specifications. Collects charge vouchers and cash for service and keeps record of transaction. Checks inventory control to determine availability of merchandise and notifies department of order that would deplete stock. Calculates and compiles statistics and prepares reports for management. Files copies of

orders received or posts order on records. Reviews orders for completeness according to reporting procedures and forwards incomplete orders for further processing. Writes or types information on form to record customer's requests and specifications. Informs customer by mail or phone of information, such as unit price, shipping date, anticipated delay, and additional information needed. Prepares invoices and shipping documents.

**43-5041.00 Meter Readers, Utilities Entry – Mid level position assuming education and experience prerequisite**

Walks or drives truck over established route and takes readings of meter dials. Reads steam meter. Indicates irregularities on forms for necessary action by service department.

Returns route book to business office for billing purposes. Verifies readings to locate abnormal consumption and records reasons for fluctuations. Turns service off for nonpayment of charges in vacant premises, or on for new occupants. Inspects meters for defects, damage, and unauthorized connections. Collects bills in arrears. Reads water meter. Reads gas meter. Reads electric meter.

**43-5052.00 Postal Service Mail Carriers Entry – Mid – Senior level position assuming education and experience prerequisite**

Inserts mail into slots of mail rack to sort mail for delivery. Delivers mail to residences and business establishments along route. Completes delivery forms, collects charges, and obtains signature on receipts for delivery of specified types of mail. Drives vehicle over established route. Sells stamps and issues money orders. Picks up outgoing mail. Enters changes of address in route book and re-addresses mail to be forwarded.

**43-5053.00 Postal Service Mail Sorters, Processors, and Processing Machine Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Prepare incoming and outgoing mail for distribution. Examine, sort, and route mail by State, type of mail, or other scheme. Load, operate, and occasionally adjust and repair mail processing, sorting, and canceling machinery. Keep records of shipments, pouches, and sacks and other duties related to mail handling within the postal service. Must complete a competitive exam.

**43-5071.00 Shipping, Receiving, and Traffic Clerks Entry – Mid – Senior level position assuming education and experience prerequisite**

Examines contents and compares with records, such as manifests, invoices, or orders, to verify accuracy of incoming or outgoing shipment. Records shipment data, such as weight, charges, space availability, and damages and discrepancies, for reporting, accounting, and recordkeeping purposes. Determines shipping method for materials, using knowledge of shipping procedures, routes, and rates. Contacts carrier representative to make arrangements and to issue instructions for shipping and delivery of materials. Confers and corresponds with establishment representatives to rectify problems, such as damages, shortages, and nonconformance to specifications. Requisitions and stores shipping materials and supplies to maintain inventory of stock. Delivers or routes materials to departments, using work devices, such as hand truck, conveyor, or sorting bins. Computes amounts, such as space available, and shipping, storage, and demurrage charges, using calculator or price list. Prepares documents, such as work orders, bills of lading, and shipping orders to route materials. Packs, seals, labels, and affixes postage to prepare materials for shipping, using work devices such as hand tools, power tools, and postage meter.

**43-5081.01 Stock Clerks, Sales Floor Entry – Mid level position assuming education and experience prerequisite**

Receives, opens, and unpacks cartons or crates of merchandise and checks invoice against items received. Stocks storage areas and displays with new or transferred merchandise. Sets up advertising signs and displays merchandise on shelves, counters, or tables to attract customers and promote sales. Stamps, attaches, or changes price tags on merchandise, referring to price list. Cleans display case, shelves, and aisles. Answers questions and advises customer in selection of merchandise.

**43-5081.02 Marking Clerks Entry – Mid level position assuming education and experience prerequisite**

Marks selling price by hand on boxes containing merchandise or on price tickets. Pins, pastes, sews, ties, or staples tickets, tags, or labels to article, using tagging mechanism. Records price, buyer, and grade of product on tickets attached to products auctioned. Prints information on tickets, using ticket-printing machine. Records number and types of articles marked and packs articles in boxes. Keeps records of production, returned goods, and related transactions.

Performs other clerical tasks during periods between auction sales. Compares printed price tickets with entries on purchase order to verify accuracy and notifies supervisor of discrepancies. Indicates price, size, style, color, and inspection results on tags, tickets, and labels, using rubber stamp or writing instrument.

**43-5081.03 Stock Clerks- Stockroom, Warehouse, or Storage Yard Entry – Mid level position assuming education and experience prerequisite**

Receives, counts, and stores stock items and records data, manually or using computer. Compares office inventory records with sales orders, invoices, or requisitions to verify accuracy and receipt of items. Locates and selects material, supplies, tools, equipment, or other articles from stock or issues stock item to workers. Packs, unpacks, and marks stock items, using identification tag, stamp, electric marking tool, or other labeling equipment. Delivers products, supplies, and equipment to designated area, and determines sequence and release of back orders according to stock availability. Prepares documents, such as inventory balance, price lists, shortages, expenditures, and periodic reports, using computer, typewriter, or calculator. Purchases or prepares documents to purchase new or additional stock and recommends disposal of excess, defective, or obsolete stock. Examines and inspects stock items for wear or defects, reports damage to supervisor, and disposes of or returns items to vendor. Confers with engineering and purchasing personnel and vendors regarding procurement and stock availability. Drives truck to pick up incoming stock or deliver parts to designated locations. Cleans and maintains supplies, tools, equipment, and instruments, and storage areas to ensure compliance to safety regulations. Assists or directs to other stockroom, warehouse, or storage yard workers. Adjusts, repairs, assembles, or prepares products, supplies, equipment, or other items, according to specifications or customer requirements. Receives and fills orders or sells supplies, materials, and products to customers. Verifies computations against physical count of stock, adjusts for errors, or investigates discrepancies. Determines method of storage, identification, and stock location based on turnover, environmental factors, and physical capacity of facility. Compiles, reviews, and maintains data from contracts, purchase orders, requisitions, and other documents to determine supply needs. Records nature, quantity, value, or location of material, supplies, or equipment received, shipped, used, or issued to workers.

**43-5081.04 Order Fillers, Wholesale and Retail Sales Entry – Mid level position assuming education and experience prerequisite**

Computes price of each group of items. Obtains merchandise from bins or shelves. Places merchandise on conveyor leading to wrapping area. Reads order to ascertain catalog number, size, color, and quantity of merchandise.

**43-5111.00 Weighers, Measurers, Checkers, and Samplers, Recordkeeping Entry – Mid level position assuming education and experience prerequisite**

Unloads or unpacks incoming shipments or arranges, packs, or prepares materials and products for display, distribution, outgoing shipment, or storage. Transports materials, products, or samples to processing, shipping, or storage areas, manually or by using conveyors, pumps, or hand trucks. Removes products or loads not meeting quality standards from stock, and notifies supervisor or appropriate department of discrepancy or shortage. Collects fees and issues receipts for payments. Communicates with customers and vendors to exchange information regarding products, materials, and services. Works with, signals, or instructs other workers to weigh, move, or check products. Operates or tends machines to clean or sanitize equipment, or manually washes equipment, using detergent, brushes, and hoses. Examines blueprints and prepares plans, layouts, or drawings of facility or finished products to identify storage locations or verify parts assemblies. Weighs or measures materials or products, using volume meters, scales, rules, and calipers. Collects, prepares, or attaches measurement, weight, or identification labels or tickets to products. Computes product totals and charges for shipments, using calculator. Compares product labels, tags, or tickets; shipping manifests; purchase orders; and bills of lading to verify that the contents, quantity, or weight of shipments is accurate. Fills orders for products and samples, following order tickets, and forwards or mails items. Collects and prepares product samples for laboratory analysis or testing. Maintains perpetual inventory of samples and replenishes stock to maintain required levels. Sorts products or materials into predetermined sequence or groupings for packing, shipping, or storage. Prepares measurement tables and conversion charts, using standard formulae. Examines products or materials, parts, and subassemblies for damage, defects, or shortages, using specification sheets, gauges, and standards charts. Documents quantity, quality, type, weight, and value of materials or products to maintain shipping, receiving, and production records and files. Counts or estimates quantities of materials, parts, or products received or shipped.

**43-9011.00 Computer Operators Entry – Mid level position assuming education and experience prerequisite**

Enters commands, using computer terminal, and activates controls on computer and peripheral equipment to integrate and operate equipment. Diagnoses reasons for equipment malfunction and enters commands to correct error or stoppage and resume operations. Records information, such as computer operating time and problems that occurred, such as down time, and actions taken. Clears equipment at end of operating run and reviews schedule to determine next assignment. Assists workers in classifying, cataloging, and maintaining tapes. Separates output, when needed, and sends data to specified users. Notifies supervisor of errors or equipment stoppage. Answers telephone calls to assist computer users encountering problems. Reads job set-up instructions to determine equipment to be used and order of use. Observes

peripheral equipment operation and error messages displayed on terminal monitor to detect faulty output or machine stoppage. Enters commands to clear computer system and start operation, using keyboard of computer terminal. Loads peripheral equipment with selected materials for operating runs, or oversees loading of peripheral equipment by peripheral equipment operators.

**43-9022.00 Word Processors and Typists Entry – Mid level position assuming education and experience prerequisite**

Types from rough draft, corrected copy, or previous version displayed on screen, using computer or typewriter. Checks completed work for spelling, grammar, punctuation, and format. Transcribes stenotyped notes of court proceedings. Stores completed documents on computer hard drive or data storage medium, such as disk. Uses data entry device, such as optical scanner, to input data into computer for revision or editing. Keeps records of work performed. Computes and verifies totals on report forms, requisitions, or bills, using adding machine or calculator. Transmits work electronically to other locations. Operates duplicating machine. Answers telephone. Sorts and distributes mail. Collates pages of reports and other documents prepared.

Files and stores completed documents. Prints and makes copy of work. Adjusts settings for format, page layout, line spacing, and other style requirements.

Types from recorded dictation. Addresses envelopes or prepares envelope labels, using typewriter or computer. Gathers and arranges material to be typed, following instructions.

**43-9031.00 Desktop Publishers Entry – Mid level position assuming education and experience prerequisite**

Views monitors for visual representation of work in progress and for instructions and feedback throughout process. Activates options, such as masking, pixel (picture element) editing, airbrushing, or image retouching. Activates options, such as masking or text processing. Enters data, such as background color, shapes, and coordinates of images; and retrieves data from system memory. Enters data, such as coordinates of images and color specifications, into system to retouch and make color corrections. Enters digitized data into electronic prepress system computer memory, using scanner, camera, keyboard, or mouse. Saves completed work on floppy disks or magnetic tape. Creates special effects, such as vignettes, mosaics, and image combining. Loads floppy disks or tapes containing information into system. Studies layout or other instructions to determine work to be done and sequence of operations.

**43-9041.01 Insurance Claims Clerks Entry – Mid level position assuming education and experience prerequisite**

Contacts insured or other involved persons for missing information. Calculates amount of claim. Transmits claims for payment or further investigation. Prepares and reviews insurance claim forms and related documents for completeness. Reviews insurance policy to determine coverage. Posts or attaches information to claim file.

**43-9041.02 Insurance Policy Processing Clerks Entry – Mid level position assuming education and experience prerequisite**

Reviews and verifies data, such as age, name, address, and principal sum and value of property on insurance applications and policies. Checks computations of interest accrued, premiums due, and settlement surrender on loan values. Corresponds with insured or agent to obtain information or inform them of status or changes to application of account. Receives computer printout of policy cancellations or obtains cancellation card from file. Collects initial premiums, issues receipts, and compiles periodic reports for management. Transcribes data to worksheets and enters data into computer for use in preparing documents and adjusting accounts. Notifies insurance agent and accounting department of policy cancellation. Calculates premiums, refunds, commissions, adjustments, and new reserve requirements, using insurance rate standards. Examines letters from policyholders or agents, original insurance applications, and other company documents to determine if changes are needed and effects of changes. Compares information from application to criteria for policy reinstatement and approves reinstatement when criteria are met.

**43-9051.01 Mail Machine Operators, Preparation and Handling Entry – Mid level position assuming education and experience prerequisite**

Inserts material for printing or addressing into loading rack on machine. Operates embossing machine or typewriter to make corrections, additions, and changes on address plates. Selects type of die size. Changes machine ribbon. Adjusts machine guides, rollers, and card insert prior to starting machine. Reads production order to determine type and size of items scheduled for printing and mailing. Places folded sheets into envelopes preparatory to mailing. Positions plates, stencils, or tapes in machine magazine. Makes adjustments to machine and inspects output for defects. Observes machine operation to detect evidence of malfunctions during production run. Checks ink level, adds ink, and fills paste reservoir. Removes printed material from machine, such as labeled articles, postmarked envelopes or tape, and folded sheets. Starts machine.



## JOB TITLES AND ASSOCIATED TASKS Sorted by Cognofile

### **43-9051.02 Mail Clerks, Except Mail Machine Operators and Postal Service Entry – Mid level position assuming education and experience prerequisite**

Sorts letters or packages into sacks or bins, and places identifying tag on sack or bin, according to destination and type. Stamps date and time of receipt of incoming mail, and distributes and collects mail. Seals or opens envelopes by hand or machine. Affixes postage to packages or letter by hand, or stamps with postage meter, and dispatches mail. Records and maintains records of information such as charges and destination of insured, registered or c.o.d. packages. Weighs packages or letters, computes charges, and accepts payment, using weight scale and rate chart. Addresses packages or letters by hand, or using addressing machine, label, or stamp. Releases packages or letters to customer upon presentation of written notice or other identification. Stacks bundles of bulk printed matter for shipment, and loads and unloads from trucks and conveyors. Answers inquiries regarding shipping or mailing policies. Receives request for merchandise samples or promotional literature, prepares shipping slips, and mails samples or literature. Inspects wrapping, address, and appearance of outgoing package or letter for conformance to standards, and accuracy. Wraps packages or bundles by hand or using tying machine.

### **43-9061.00 Office Clerks, General Entry – Mid level position assuming education and experience prerequisite**

Compiles, copies, sorts, and files records of office activities, business transactions, and other activities. Operates office machines, such as photocopier, telecopier, and personal computer. Stuffs envelopes and addresses, stamps, sorts, and distributes mail, packages, and other materials. Orders materials, supplies, and services, and completes records and reports. Transcribes dictation and composes and types letters and other correspondence, using typewriter or computer. Communicates with customers, employees, and other individuals to disseminate or explain information. Collects, counts, and disburses money, completes banking transactions, and processes payroll. Completes work schedules and arranges appointments for staff and students. Reviews files, records, and other documents to obtain information to respond to requests. Answers telephone, responds to requests, delivers messages, and runs errands. Completes and mails bills, contracts, policies, invoices, or checks. Computes, records, and proofreads data and other information, such as records or reports.

### **45-2011.00 Agricultural Inspectors Mid – Senior level position assuming education and experience prerequisite**

Inspects facilities and equipment for adequacy, sanitation, and compliance with regulations. Examines, weighs, and measures commodities such as poultry, eggs, meta, and seafood to certify wholesomeness, grade, and weight. Writes reports of findings and recommendations and advises farmer, grower, or processor of corrective action to be taken. Advises farmers and growers of development programs or new equipment and techniques to aid in quality production, applying agricultural knowledge. Testifies in legal proceedings. Collects sample of pests or suspected diseased animals or materials and routes to laboratory for identification and analysis. Inspects livestock to determine effectiveness of medication and feeding programs. Inspects horticultural products or livestock to detect harmful disease, infestation or growth rate.

### **45-2021.00 Animal Breeders Mid – Senior level position assuming education and experience prerequisite**

Selects animals to be bred, according to knowledge of animals, genealogy, traits, and offspring desired. Records weight, diet, and other breeding data. Examines animals to detect symptoms of illness or injury. Feeds and waters animals, and cleans, pens, cages, yards, and hutches. Treats minor injuries and ailments and engages veterinarian to treat animals with serious illnesses or injuries. Clips or shears hair on animals. Arranges for sale of animals to hospitals, research centers, pet shops, and food processing plants. Adjusts controls to maintain specific temperature in building. Kills animals, removes their pelts, and arranges for sale of pelts. Exhibits animals at shows. Builds and maintains hutches, pens, and fenced yards. Milks cows and goats. Brands, tags, dehornes, tattoos, or castrates animals.

### **45-2041.00 Graders and Sorters, Agricultural Products Entry – Mid level position assuming education and experience prerequisite**

Grades and sorts products, according to factors, such as color, length, width, appearance, feel, and smell. Weighs and places products in containers, according to grade and marks grade on containers. Segregates products on conveyor belt or table, according to grade, color, size, fiber quality, species, deformities, and sex. Estimates weight of product visually and by feel. Examines product fibers through microscope to determine maturity and spirality of fibers. Discards inferior or defective products and foreign matter and places acceptable products in containers for further processing. Pulls product sample apart between fingers to determine fiber quality. Records grade on tag or shipping, receiving, or sales sheet.

### **45-2091.00 Agricultural Equipment Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Drives tractor with implements to plow, plant, cultivate, or harvest crops and to move trailers for crop harvest.

Manipulates controls to set, activate, and regulate mechanisms on machinery such as self-propelled machines, conveyors, separators, cleaners, and dryers. Drives truck, or tractor with trailer attached, alongside crew loading crop or adjacent to harvesting machine. Observes and listens to machinery operation to detect equipment malfunction, and removes obstruction to avoid damage to product or machinery. Discards diseased or rotting product, and guides product on conveyor to regulate flow through machine. Attaches farm implements, such as plow, disc, sprayer, or harvester, to tractor, using bolts and mechanic's hand tools. Weighs crop-filled containers and records weights and other identifying information. Loads and unloads crops or containers of materials, manually or using conveyors, hand truck, forklift, or transfer auger. Mixes specified materials or chemicals and dumps solutions, powders, or seeds into planter or sprayer machinery. Irrigates soil, using portable pipe or ditch system, and maintains ditch or pipe and pumps. Walks beside or rides on planting machine while inserting plants in planter mechanism at specified intervals. Adjusts, repairs, lubricates, and services farm machinery, and notifies supervisor or appropriate personnel when machinery malfunctions. Loads hoppers, containers, or conveyor to feed machine with products, using suction gates, shovel, or pitchfork. Thins, hoes, weeds, or prunes row crops, fruit trees, or vines, using hand implements. Oversees work crew engaged in planting, weeding, or harvesting activities. Hand picks fruit, such as apples, oranges, or strawberries. Positions boxes or attaches bags at discharge end of machinery to catch products, places lids on boxes, and closes sacks. Sprays fertilizer or pesticide solutions, using hand sprayer, to control insects, fungus and weed growth, and diseases. Drives truck to haul harvested crops, supplies, tools, or farm workers.

**45-2092.01 Nursery Workers Entry – Mid level position assuming education and experience prerequisite**

Hauls and spreads topsoil, fertilizer, peat moss, and other materials to condition soil, using wheelbarrow or cart and shovel. Sows grass seed or plants plugs of grass and cuts, rolls, and stacks sod. Fills growing tanks with water. Moves containerized shrubs, plants, and trees, using wheelbarrow. Ties, bunches, wraps roots, and packs flowers, plants, shrubs, and trees to fill orders. Dips rose cuttings into vat to disinfect prior to storage. Folds and staples corrugated forms to make boxes used for packing horticultural products. Traps and destroys pests, such as moles, gophers, and mice, using pesticides. Cuts and opens incision in rootstock, using budding knife, and inserts and ties bud. Plants, sprays, weeds, and waters plants, shrubs, and trees, using hand tools and gardening tools. Digs, rakes, and screens soil and fills cold frames and hot beds to prepare them for planting. Inspects bud tie to ensure quality.

**45-2092.02 General Farm Workers Entry – Mid level position assuming education and experience prerequisite**

Operates tractors, tractor-drawn machinery, and self-propelled machinery to plow, harrow and fertilize soil, and plant, cultivate, spray, and harvest crops. Oversees casual and seasonal help during planting and harvesting. Repairs and maintains farm vehicles, implements, and mechanical equipment. Administers simple medications to animals and fowls. Cleans barns, stables, pens, and kennels. Loads agricultural products into trucks for transport. Digs and transplants seedlings by hand. Repairs farm buildings, fences, and other structures. Sets up and operates irrigation equipment. Operates truck to haul livestock and products to market. Clears and maintains irrigation ditches. Harvests fruits and vegetables by hand. Feeds, waters, grooms, and otherwise cares for livestock and poultry.

**45-2093.00 Farm Workers, Farm and Ranch Animals Entry – Mid level position assuming education and experience prerequisite**

Waters livestock. Castrates or docks ears and tails of animals. Assists with birthing of animals. Fills feed troughs with feed. De-beaks and trims wings of poultry. Maintains equipment and machinery. Segregates animals according to weight, age, color, and physical condition. Grooms, clips, and trims animals. Moves equipment, poultry, or livestock manually or using truck or cart from one location to another. Inspects and repairs fences, stalls, and pens. Maintains growth, feeding, production, and cost records. Mixes feed, additives, and medicines in prescribed portions. Collects, inspects, packs or places eggs in incubator. Milks farm animals, such as cows and goats, by hand or using milking machine. Marks livestock to identify ownership, and grade, using brands, tags, paint, or tattoos. Cleans stalls, pens, and equipment, using disinfectant solutions, brushes, shovels and water hoses. Examines animals to detect disease and injuries. Applies or administers medications and vaccinates animals. Sprays livestock with disinfectants and insecticides. Herds livestock to pasture for grazing, or to scales, trucks, or other enclosures.

**45-3011.00 Fishers and Related Fishing Workers Entry – Mid level position assuming education and experience prerequisite**

Cultivates and harvests or gathers marine life, such as sponges, abalone, or oysters, from sea bottom, using diving or

dredging equipment or barge. Negotiates with buyers for sale of catch. Lubricates, adjusts, and makes minor repairs to engines and fishing equipment.

Washes deck, conveyors, knives, and other equipment, using brush, detergent, and water. Records date, harvest area, and yield in logbook. Rows boats and dinghies and operates skiffs to transport fishers, divers, and sponge hookers and to tow and position fishing equipment. Steers vessel in fishing area. Places catch in containers and stows in hold with salt and ice.

Signals other workers to move, hoist, and position loads. Sorts and cleans marine life, and returns undesirable or illegal catch to sea.

Stands lookout for schools of fish and for steering and engine-room watches. Pulls and guides nets, traps, and lines onto vessel, by hand or using hoisting equipment. Attaches nets, slings, hooks, blades, and lifting devices to cables, booms, hoists, and dredges. Hits fish with club or hooks fish with gaff to assist in hauling large fish from water. Loads and unloads equipment and supplies aboard vessel, by hand or using hoisting equipment. Removes catch from fishing equipment and uses measuring equipment to ensure compliance with legal size. Puts fishing equipment into water and anchors or tows equipment according to method of fishing. Connects accessories, such as floats, weights, flags, lights, or markers, to nets, lines, or traps.

**45-3021.00 Hunters and Trappers Entry – Mid – Senior level position assuming education and experience prerequisite**

Traps or captures quarry alive for identification, relocation, or live sale. Stands watch to observe behavior of captured quarry. Trains dogs for hunting. Removes designated parts, such as ears or tail, from slain quarry as evidence for killing bounty, using knife. Packs pelts in containers and loads containers onto trucks for transporting. Washes and sorts pelts according to species, color, and quality. Scrapes fat, blubber, or flesh from skin-side of pelt with knife or hand scraper, and cures pelts with salt and boric acid. Kills quarry for pelts or bounty, using club, poison, gun, or drowning method. Patrols trap line or nets to inspect settings, remove catch, and reset or relocate traps. Restrains quarry with arms or nets, and rigs net or sling under catch to permit hoisting without bodily injury. Skins quarry, using knife, and stretches pelts on frames to be cured. Releases quarry from trap or net and transfers it to cage, or secures identification tag to quarry and releases it. Drives quarry into traps, nets, or killing area, using dogs or prods. Select, baits, and sets traps according to species, size, habits, and environs of bird or animal and reason for trapping.

**45-4011.00 Forest and Conservation Workers Entry – Mid – Senior level position assuming education and experience prerequisite**

Plants, cultivates, and harvests trees and tree seedlings to reforest land. Sorts and separates tree seedlings, discarding substandard seedlings, according to standard chart and verbal instructions. Fells trees, clears brush from fire breaks, and extinguishes flames and embers to suppress fires. Examines and grades trees according to standard chart and staples color-coded grade tags to limbs. Clears and piles brush, limbs, and other debris from roadside, fire trails, camping areas, and planting areas. Erects signs and fences, using posthole digger, shovel, or other hand tools. Gathers, bundles or sacks, and delivers forest products to buyer. Maintains campsites and recreational areas, replenishing firewood and other supplies, and cleaning kitchens and restrooms. Drags cut trees from cutting area and loads trees onto truck. Helps forest survey crews by clearing site lines, holding measuring tools, and setting stakes. Prunes or shears treetops and limbs to control growth, increase density, and improve shape. Identifies and cuts diseased, weak, and other undesirable trees to protect forested areas. Sprays or injects trees, brush, and weeds with herbicides to combat insects, pests, and harmful diseases. Selects and cuts trees according to markings or size, specie, and grade.

**45-4021.00 Fallers Entry – Mid level position assuming education and experience prerequisite**

Scores cutting lines with ax, saws undercut along scored lines with chain saw, and knocks slabs from cuts with ax. Inserts jacks or drives wedge behind saw to prevent binding of saw and start tree falling. Cuts felled trees into log lengths, using chain saw and ax. Stops saw engine as tree falls, pulls cutting bar from cut, and runs to safe location to avoid injury. Splits logs, using ax, wedges, and maul, and stacks wood in rick or cord lots. Clears brush from work area and escape route, and cuts sapling and other trees from direction of fall, using ax and chain saw. Secures cables to logs, and drives tractor to drag logs to landing. Appraises tree for characteristics, such as twist, rot, and heavy limb growth, and gauges amount and direction of lean. Tags unsafe trees with high visibility ribbon. Loads logs or wood onto trucks, by hand or using winch. Places supporting limbs or poles under felled tree to avoid splitting underside and to prevent log from rolling. Measures and marks felled trees for cutting into log lengths. Determines position, direction, and depth of cuts to be made, and placement of wedges or jacks. Cuts limbs from felled trees, using chain saw or ax. Saws back-cuts, leaving sufficient sound wood to control direction of fall.

**45-4022.01 Logging Tractor Operators Entry – Mid – Senior level position assuming education and experience prerequisite**



Drives and maneuvers tractor and activates shear to cut and fell trees. Controls equipment to load, unload, or stack logs, pull stumps, and clear brush. Drives tractor to build or repair logging and skid roads. Saws felled trees into lengths. Gives or receives signals from coworkers to move logs. Controls hydraulic tractor equipped with tree clamp and boom to lift, swing, and bunch sheared trees.

**45-4023.00 Log Graders and Scalers Mid – Senior level position assuming education and experience prerequisite**

Estimates and calculates total volume, waste volume, and marketable volume of log using measurements and conversion table, and records results. Tends conveyor chain to move logs to and from scaling station. Weighs log trucks before and after unloading and records weight and identity of supplier. Measures wood to determine dimensions or quantity using measuring device and conversion table. Jabs log with scale stick and inspects log for defects and to ascertain characteristics. Paints mark on logs to identify grade and species or calls out grade. Evaluates log's characteristics and determines grade using established criteria.

**47-2011.00 Boilermakers Entry – Mid – Senior level position assuming education and experience prerequisite**

Positions, aligns, and secures structural parts and related assemblies of pressure vessels, using plumb bobs, levels, wedges and turnbuckles. Installs manholes, handholes, valves, gauges, and feedwater connections in drums of water tube boilers using hand tools. Repairs or replaces defective pressure vessel parts, using torchjacks, caulking hammers, power saw, threading die, and welding equipment. Shapes seams, joints, and irregular edges of pressure vessel sections and structural parts to attain specified fit, using cutting torch, files, and power grinder. Studies blueprints to determine location, relationship and dimensions of parts, to assemble pressure vessels, such as boilers, tanks and vats. Installs refractory brick and other heat resistant materials in firebox of pressure vessel. Locates and marks reference points for columns or plates on foundation, using master straightedge, square, transit and measuring instruments. Attaches rigging and signals crane operator to lift pressure vessel parts to specified position. Cleans pressure vessel equipment, using scrapers, wire brush and cleaning solvent. Fabricates parts, such as stacks, uptakes, and chutes, to adapt pressure vessel to premises. Repairs insulation of pressure vessel with cement. Maintains and repairs stationary steam boilers and boiler house auxiliaries, using hand tools and power tools. Inspects assembled vessels for faulty accessories and pressure tests for leakage. Bells, beads with power hammer, or welds pressure vessel tube ends to ensure leak proof joints. Straightens or reshapes bent pressure vessel plates and structure parts, using hammer, jacks, and torch. Bolts or arc-welds pressure vessel structures and parts together, using wrenches and welding equipment.

**47-2021.00 Brickmasons and Blockmasons Entry – Mid – Senior level position assuming education and experience prerequisite**

Lays and aligns bricks, blocks, or tiles to build or repair structures or high temperature equipment, such as cupola, kilns, ovens, or furnaces. Applies and smooths mortar or other mixture over work surface and removes excess, using trowel and hand tools. Measures distance from reference points and marks guidelines to lay out work, using plumb bobs and levels. Examines brickwork or structure to determine need for repair. Fastens or fuses brick or other building material to structure with wire clamps, anchor holes, torch, or cement. Cleans working surface to remove scale, dust, soot, or chips of brick and mortar, using broom, wire brush, or scrapper. Sprays or spreads refractory material over brickwork to protect against deterioration. Removes burned or damaged brick or mortar, using sledgehammer, crowbar, chipping gun, or chisel. Breaks or cuts bricks, tiles, or blocks to size, using edge of trowel, hammer, or power saw. Mixes specified amount of sand, clay, dirt, or mortar powder with water to form refractory mixture. Calculates angles and courses and determines vertical and horizontal alignment of courses.

**47-2022.00 Stonemasons Entry – Mid – Senior level position assuming education and experience prerequisite**

Shapes, trims, faces and cuts marble or stone preparatory to setting, using power saws, cutting equipment, and hand tools. Lays out wall pattern or foundation of monument, using straight edge, rule, or staked lines. Finishes joints between stones, using trowel. Smooths, polishes, and bevels surfaces, using hand tools and power tools. Positions mold along guidelines of wall, presses mold in place, and removes mold and paper from wall. Removes sections of monument from truck bed, and guides stone onto foundation, using skids, hoist, or truck crane. Repairs cracked or chipped areas of ornamental stone or marble surface, using blowtorch and mastic. Digs trench for foundation of monument, using pick and shovel. Drills holes in marble or ornamental stone and anchors bracket. Lines interiors of molds with treated paper and fills molds with composition-stone mixture. Cleans excess mortar or grout from surface of marble, stone, or monument, using sponge, brush, water, or acid. Mixes mortar or grout and pours or spreads mortar or grout on marble slabs, stone, or foundation. Aligns and levels stone or marble, using measuring devices, such as rule, square, and plumb line. Sets stone or marble in place, according to layout or pattern.

**47-2031.01 Construction Carpenters Entry – Mid – Senior level position assuming education and experience prerequisite**

Shapes or cuts materials to specified measurements, using hand tools, machines, or power saw. Assembles and fastens materials, using hand tools and wood screws, nails, dowel pins, or glue, to make framework or props. Installs structures and fixtures, such as windows, frames, floorings, and trim, or hardware, using carpenter's hand and power tools. Builds or repairs cabinets, doors, frameworks, floors, and other wooden fixtures used in buildings, using woodworking machines, carpenter's hand tools, and power tools. Fills cracks and other defects in plaster or plasterboard and sands patch, using patching plaster, trowel, and sanding tool. Removes damaged or defective parts or sections of structure and repairs or replaces, using hand tools. Verifies trueness of structure, using plumb bob and level. Prepares layout according to blueprint or oral instructions, using rule, framing square, and calipers. Estimates amount and kind of lumber or other materials required, and selects and orders them. Inspects ceiling or floor tile, wall coverings, siding, glass, or woodwork to detect broken or damaged structures. Studies specifications in blueprints, sketches, or building plans to determine materials required and dimensions of structure to be fabricated. Measures and marks cutting lines on materials, using ruler, pencil, chalk, and marking gauge. Finishes surfaces of woodworking or wallboard in houses and buildings, using paint, hand tools, and paneling.

**47-2031.02 Rough Carpenters Entry – Mid – Senior level position assuming education and experience prerequisite**

Assembles and fastens material together to construct wood or metal framework of structure, using bolts, nails, or screws. Measures materials or distances, using square, measuring tape, or rule to lay out work. Bore holes in timber with masonry or concrete walls, using power drill. Installs rough door and window frames, sub flooring, fixtures, or temporary supports in structures undergoing construction or repair. Examines structural timbers and supports to detect decay, and replaces timber, using hand tools, nuts, and bolts. Anchors and braces forms and other structures in place, using nails, bolts, anchor rods, steel cables, planks, wedges, and timbers. Digs or directs digging of postholes and sets pole to support structure. Fabricates parts, using woodworking and metalworking machines. Erects forms of prefabricated forms, framework, scaffolds, hoists, roof supports, or chutes, using hand tools, plumb rule, and level. Cuts or saws boards, timbers, or plywood to required size, using handsaw, power saw, or woodworking machine. Studies blueprints and diagrams to determine dimensions of structure or form to be constructed, or erected.

**47-2031.03 Carpenter Assemblers and Repairers Entry – Mid – Senior level position assuming education and experience prerequisite**

Measures and marks location of studs, leaders, and receptacle openings, using tape measure, template, and marker. Installs prefabricated windows and doors, insulation, wall, ceiling and floor panels or siding, using adhesives, hoists, hand tools, and power tools. Removes surface defects, using knife, scraper, wet sponge, electric iron, and sanding tools. Trims overlapping edges of wood, weatherboard, using portable router or power saw, and hand tools. Applies stain, paint or crayons to defects and filter to touch up the repaired area. Directs crane operator in positioning floor, wall, ceiling, and roof panel on house foundation. Moves panel or roof section to other workstations or to storage or shipping area, using electric hoist. Studies blueprints, specification sheets, and drawings to determine style and type of window or wall panel required. Fills cracks, seams, depressions, and nail holes with filler. Examines wood surfaces for defects, such as nicks, cracks, or blisters. Measures cut materials to determine conformance to specifications, using tape measure. Realigns windows and screens to fit casements and oils moving parts. Repairs or replaces defective locks, hinges, cranks, and pieces of wood, using glue, hand tools, and power tools. Lays out and aligns materials on worktable or in assembly jig according to specified instructions. Cuts sidings and moldings, sections of weatherboard, openings in sheetrock, and lumber, using hand tools and power tools. Aligns and fastens materials together, using hand tools and power tools, to form building or bracing.

**47-2031.04 Ship Carpenters and Joiners Entry – Mid – Senior level position assuming education and experience prerequisite**

Reads blueprints to determine dimensions of furnishings in ships or boats. Assembles and installs hardware, gaskets, floors, furnishings, or insulation, using adhesive, hand tools, and power tools. Cuts wood or glass to specified dimensions, using hand tools and power tools. Shapes irregular parts and trims excess material from bulkhead and furnishings to ensure fit meets specifications. Constructs floors, doors, and partitions, using woodworking machines, hand tools, and power tools. Greases gears and other moving parts of machines on ship. Transfers dimensions or measurements of wood parts or bulkhead on plywood, using measuring instruments and marking devices. Repairs structural woodwork and replaces defective parts and equipment, using hand tools and power tools. Shapes and laminates wood to form parts of ship, using steam chambers, clamps, glue, and jigs.

**47-2031.05 Boat Builders and Shipwrights Entry – Mid – Senior level position assuming education and experience prerequisite**

Cuts and forms parts, such as keel, ribs, sidings, and support structures and blocks, using woodworking hand tools and

power tools. Attaches metal parts, such as fittings, plates, and bulkheads, to ship, using brace and bits, augers, and wrenches. Smooths and finishes ship surfaces, using power sander, broadax, adz, and paint, and waxes and buffs surface to specified finish. Measures and marks dimensional lines on lumber, following template and using scriber. Establishes dimensional reference points on layout and hull to make template of parts and locate machinery and equipment. Consults with customer or supervisor and reads blueprint to determine necessary repairs.

Attaches hoist to sections of hull, and directs hoist operator to align parts over blocks, according to layout of boat. Marks outline of boat on building dock, shipway, or mold loft according to blueprint specifications, using measuring instruments and crayon. Inspects boat to determine location and extent of defect. Positions and secures support structures on construction area.

Cuts out defect, using power tools and hand tools, and fits and secures replacement part, using caulking gun, adhesive, or hand tools. Assembles and installs hull timbers and other structures in ship, using adhesive, measuring instruments, and hand tools or power tools. Constructs and shapes wooden frames, structures, and other parts according to blueprint specifications, using hand tools, power tools, and measuring instruments.

**47-2031.06 Brattice Builders Entry – Mid – Senior level position assuming education and experience prerequisite**

Installs rigid and flexible air ducts to transport air to work areas. Erects partitions to support roof in areas unsuited to timbering or bolting. Drills and blasts obstructing boulders to reopen ventilation shafts.

**47-2041.00 Carpet Installers Entry – Mid level position assuming education and experience prerequisite**

Stretches carpet to ensure smooth surface and presses carpet in place over tack strips. Installs carpet on some floors using adhesive, following prescribed method. Cuts carpet padding to size and installs padding, following prescribed method. Cuts and trims carpet to fit along wall edges, openings, and projections. Studies floor sketches to determine area to be carpeted and amount of material needed to complete job. Joins edges of carpet that meet at openings, using tape with glue and heated carpet iron. Moves furniture from area to be carpeted and removes old carpet and padding. Fastens metal treads across door openings or where carpet meets flooring to hold carpet in place. Nails tack strips around area to be carpeted or uses old strips to attach edges of new carpet. Sews sections of carpeting together by hand, when necessary. Measures and cuts carpeting to size according to floor sketches, using carpet knife.

**47-2042.00 Floor Layers, Except Carpet, Wood, and Hard Tiles Entry – Mid level position assuming education and experience prerequisite**

Lays out, positions, and applies tile and other decorative material to floors, walls, and cabinets. Rolls and presses sheet wall and floor covering into cement base to smooth and finish surface, using hand roller. Brushes waterproof compound onto surface and fills cracks with plaster, putty, or grout to seal pores and form smooth foundation. Trims excess covering materials, tacks edges, and joins sections of covering material to form tight joint. Disconnects and removes appliances, light fixtures, and worn floor and wall covering from floors, walls, and cabinets. Sweeps, scrapes, sands, or chips dirt and irregularities to clean base surfaces. Removes excess cement to clean finished surface and applies grout to seal joints of tile. Measures and marks guidelines on surfaces or foundations, using chalk lines and dividers. Heats and softens floor covering materials to patch cracks and form floor coverings around irregular surfaces, using blow torch. Applies adhesive cement onto floor or wall material to join and adhere foundation material. Cuts covering and foundation materials, according to blueprints and sketches, and cuts pattern around floor obstructions.

**47-2043.00 Floor Sanders and Finishers Entry – Mid level position assuming education and experience prerequisite**

Guides machine over surface of floor until surface is smooth. Applies filler compound to floor to seal wood. Scrapes and sands floor edges and areas inaccessible to floor sander, using scraper and disk-type sander. Attaches sandpaper to roller of sanding machine.

**47-2044.00 Tile and Marble Setters Entry – Mid level position assuming education and experience prerequisite**

Positions and presses or taps tile with trowel handle to affix tile to plaster or adhesive base. Cuts and shapes tile, using tile cutters and biters. Measures and cuts metal lath to size for walls and ceilings, using tin snips. Wipes grout between tiles and removes excess, using wet sponge. Brushes glue onto manila paper on which design has been drawn and positions tile's finished side down onto paper. Mixes and applies mortar or cement to edges and ends of drain tiles to seal halves and joints. Installs and anchors fixtures in designated position, using hand tools. Tacks lath to wall and ceiling surfaces, using staple gun or hammer. Selects tile and other items to be installed, such as bathroom accessories, walls, panels, and cabinets, according to specifications. Measures and marks surfaces to be tiled and lays out work, following blueprints. Spreads plaster or concrete over surface to form tile base and levels to specified thickness, using brush, trowel and screed. Cuts tile backing to required size, using shears. Spreads mastic or other adhesive base on roof deck to form base for promenade tile, using serrated spreader.

**47-2051.00 Cement Masons and Concrete Finishers Entry – Mid – Senior level position assuming education and experience prerequisite**

Chips, scrapes, and grinds high spots, ridges, and rough projections to finish concrete, using pneumatic chisel, hand chisel, or hand tools. Polishes surface, using polishing or surfacing machine. Pushes roller over surface to imbed chips in surface. Builds wooden molds, and clamps molds around area to be repaired, using hand tools. Cuts out damaged areas, drills holes for reinforcing rods, and positions reinforcing rods to repair concrete, using power saw and drill. Mixes cement, sand, and water to produce concrete, grout, or slurry, using hoe, trowel, tamper, scraper, or concrete-mixing machine. Molds expansion joints and edges, using edging tools, jointers, and straightedge. Applies muriatic acid to clean surface, and rinses with water. Cuts metal division strips, and presses them into terrazzo base so that top edges form desired design or pattern. Spreads roofing paper on surface of foundation, and spreads concrete onto roofing paper with trowel to form terrazzo base. Produces rough concrete surface, using broom. Signals truck driver to position truck to facilitate pouring concrete, and moves chute to direct concrete on forms. Spreads, levels, and smooths concrete, using rake, shovel, hand or power trowel, hand or power screed, and float. Cleans chipped area, using wire brush, and feels and observes surface to detect rough or uneven surface. Wets surface to prepare for bonding, fills holes and cracks with grout or slurry, and smooths, using trowel. Wets concrete surface, and rubs with stone to smooth surface and obtain specified finish. Sprinkles colored marble or stone chips, powdered steel, or coloring powder over surface to produce prescribed finish.

**47-2053.00 Terrazzo Workers and Finishers Entry – Mid level position assuming education and experience prerequisite**

Chips, scrapes, and grinds high spots, ridges, and rough projections to finish concrete, using pneumatic chisel, hand chisel, or hand tools. Polishes surface, using polishing or surfacing machine. Pushes roller over surface to imbed chips in surface. Spreads roofing paper on surface of foundation, and spreads concrete onto roofing paper with trowel to form terrazzo base. Produces rough concrete surface, using broom. Spreads, levels, and smooths concrete, using rake, shovel, hand or power trowel, hand or power screed, and float. Cleans chipped area, using wire brush, and feels and observes surface to detect rough or uneven surface. Wets surface to prepare for bonding, fills holes and cracks with grout or slurry, and smooths, using trowel. Wets concrete surface, and rubs with stone to smooth surface and obtain specified finish. Sprinkles colored marble or stone chips, powdered steel, or coloring powder over surface to produce prescribed finish. Cuts metal division strips, and presses them into terrazzo base so that top edges form desired design or pattern. Applies muriatic acid to clean surface, and rinses with water. Mixes cement, sand, and water to produce concrete, grout, or slurry, using hoe, trowel, tamper, scraper, or concrete-mixing machine. Signals truck driver to position truck to facilitate pouring concrete, and moves chute to direct concrete on forms. Builds wooden molds, and clamps molds around area to be repaired, using hand tools. Cuts out damaged areas, drills holes for reinforcing rods, and positions reinforcing rods to repair concrete, using power saw and drill. Molds expansion joints and edges, using edging tools, jointers, and straightedge.

**47-2061.00 Construction Laborers Entry – Mid level position assuming education and experience prerequisite**

Tends pumps, compressors, and generators to provide power for tools, machinery, and equipment or to heat and move materials such as asphalt. Positions, joins, aligns, and seals structural components, such as concrete wall sections and pipes. Digs ditches and levels earth to grade specifications, using pick and shovel. Signals equipment operators to facilitate alignment, movement, and adjustment of machinery, equipment, and materials. Builds and positions forms for pouring concrete and dismantles forms after use, using saws, hammers, nails, or bolts. Grinds, scrapes, sands, or polishes surfaces, such as concrete, marble, terrazzo, or wood flooring, using abrasive tools or machines. Erects and disassembles scaffolding, shoring, braces, and other temporary structures. Mixes concrete, using portable mixer. Loads and unloads trucks and hauls and hoists materials. Measures, marks, and records openings and distances to lay out area to be graded or to erect building structures. Smooth and finishes freshly poured cement or concrete, using float, trowel, screed, or powered cement finishing tool. Applies caulking compounds by hand or with caulking gun to seal crevices. Tends machine that pumps concrete, grout, cement, sand, plaster or stucco through spray gun for application to ceilings and walls. Lubricates, cleans, and repairs machinery, equipment, and tools. Sprays materials such as water, sand, steam, vinyl, paint, or stucco through hose to clean, coat, or seal surfaces. Razes buildings and salvages useful materials. Mixes ingredients to create compounds, used to cover or clean surfaces. Cleans construction site to eliminate possible hazards. Mops, brushes, or spreads paints, cleaning solutions or other compounds over surfaces to clean or provide protection.

**47-2071.00 Paving, Surfacing, and Tamping Equipment Operators Entry – Mid level position assuming education and experience prerequisite**

Operates machine or manually rolls surfaces to compact earth fills, foundation forms, and finished road materials,

according to grade specifications. Sets up forms and lays out guidelines for curbs, according to written specifications, using string, spray paint, and concrete/water mix. Cleans, maintains, and repairs equipment, according to specifications, using mechanics' hand tools, or reports malfunction to supervisor. Fill tank, hopper, or machine with paving materials. Installs dies, cutters, and extensions to screed onto machine, using hand tools. Drives machine onto truck trailer and drives truck to transport machine to and from job site. Lights burner or starts heating unit of machine and regulates temperature. Monitors machine operation and observes distribution of paving material to adjust machine settings or material flow. Operate machine to spread, smooth, or steel-reinforce stone, concrete, or asphalt. Operate machine to mix and spray binding, waterproofing, and curing compounds. Operates machine to clean or cut expansion joints in concrete or asphalt and to rout out cracks in pavement. Starts machine, engages clutch, pushes and moves levers, and turns wheels to control and guide machine along forms or guidelines. Drives and operates curbing machine to extrude concrete or asphalt curbing.

**47-2072.00 Pile-Driver Operators Entry – Mid level position assuming education and experience prerequisite**

Moves hand and foot levers to control hoisting equipment to position piling leads, hoist piling into leads, and position hammer over piling. Moves levers and turns valves to activate power hammer or raise and lower drop hammer, which drives piles to required depth.

**47-2073.01 Grader, Bulldozer, and Scraper Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Starts engine, moves throttle, switches, and levers, and depresses pedals to operate machines, equipment, and attachments. Drives equipment in successive passes over working area to achieve specified result, such as grade terrain or remove, dump, or spread earth and rock. Fastens bulldozer blade or other attachment to tractor, using hitches. Greases, oils, and performs minor repairs on tractor, using grease gun, oilcans, and hand tools. Signals operator to guide movement of tractor-drawn machine. Connects hydraulic hoses, belts, mechanical linkage, or power takeoff shaft to tractor. Aligns machine, cutter head, or depth gauge marker with reference stakes and guidelines on ground or positions equipment following hand signals of assistant.

**47-2073.02 Operating Engineers Mid – Senior level position assuming education and experience prerequisite**

Adjusts hand wheels and depresses pedals to drive machines and control attachments, such as blades, buckets, scrapers, and swing booms. Repairs and maintains equipment. Turns valves to control air and water output of compressors and pumps.

**47-2081.01 Ceiling Tile Installers Entry – Mid level position assuming education and experience prerequisite**

Applies acoustical tiles or shock-absorbing materials to ceilings and walls of buildings to reduce or reflect sound and to decorate rooms. Nails or screws molding to wall to support and seals joint between ceiling tile and wall. Applies cement to back of tile and presses tile into place, aligning with layout marks and joints of previously laid tile. Scribes and cuts edges of tile to fit wall where wall molding is not specified. Cuts tiles for fixture and borders, using keyhole saw, and inserts tiles into supporting framework. Hangs dry lines (stretched string) to wall molding to guide positioning of main runners. Washes concrete surfaces with washing soda and zinc sulfate solution before mounting tile to increase adhesive qualities of surfaces. Inspects furrings, mechanical mountings, and masonry surface for plumbness and level, using spirit or water level. Measures and marks surface to lay out work according to blueprints and drawings. Nails channels or wood furring strips to surfaces to provide mounting for tile.

**47-2081.02 Drywall Installers Entry – Mid level position assuming education and experience prerequisite**

Trims rough edges from wallboard to maintain even joints, using knife. Fits and fastens wallboard or sheetrock into specified position, using hand tools, portable power tools, or adhesive. Cuts openings into board for electrical outlets, windows, vents, or fixtures, using keyhole saw or other cutting tools. Installs horizontal and vertical metal or wooden studs for attachment of wallboard on interior walls, using hand tools. Lays out reference lines and points, computes position of framing and furring channels, and marks position, using chalk line. Assembles and installs metal framing and decorative trim for windows, doorways, and bents. Reads blueprints and other specifications to determine method of installation, work procedures, and material and tool requirements. Installs blanket insulation between studs and tacks plastic moisture barrier over insulation. Removes plaster, drywall, or paneling, using crowbar and hammer. Suspends angle iron grid and channel iron from ceiling, using wire. Cuts metal or wood framing, angle and channel iron, and trim to size, using cutting tools. Measures and marks cutting lines on framing, drywall, and trim, using tape measure, straightedge or square, and marking devices.

**47-2082.00 Tapers Entry – Mid level position assuming education and experience prerequisite**

Spreads sealing compound between boards, using trowel, broad knife or spatula. Sands rough spots after cement has dried. Installs metal molding at corners in lieu of sealant and tape. Fills cracks and holes in walls and ceiling with sealing compound. Countersinks nails or screws below surface of wall prior to applying sealing compound, using hammer or screwdriver. Applies texturizing compound and primer to walls and ceiling preparatory to final finishing, using brushes, roller, or spray gun. Mixes sealing compound by hand or with portable electric mixer. Spreads and smooths cementing material over tape, using trowel or floating machine to blend joint with wall surface. Presses paper tape over joint to embed tape into sealing compound and seal joint. Tapes joint, using mechanical applicator that spreads compound and embeds tape in one operation.

**47-2111.00 Electricians Entry – Mid – Senior level position assuming education and experience prerequisite**

Installs electrical wiring, equipment, apparatus, and fixtures, using hand tools and power tools.  
Diagnoses malfunctioning systems, apparatus, and components, using test equipment and hand tools.  
Tests electrical systems and continuity of circuits in electrical wiring, equipment, and fixtures, using testing devices, such as ohmmeter, voltmeter, and oscilloscope.  
Drives vehicle, operates floodlights, and places flares during power failure or emergency.  
Directs and trains workers to install, maintain, or repair electrical wiring, equipment, and fixtures.  
Possesses electrician's license or identification card to meet governmental regulations.  
Constructs and fabricates parts, using hand tools and specifications.  
Climbs ladder to install, maintain or repair electrical wiring, equipment and fixtures.  
Prepares sketches of location of wiring and equipment or follows blueprints to determine location of equipment and conformance to safety codes.  
Readies and assembles electrical wiring, equipment and fixtures, using specifications and hand tools.  
Maintains and repairs or replaces wiring, equipment and fixtures, using hand tools.  
Inspects systems and electrical parts to detect hazards, defects, and need for adjustments or repair.  
Plans layout and installation of electrical wiring, equipment and fixtures consistent with specifications and local codes.

**47-2121.00 Glaziers Entry – Mid – Senior level position assuming education and experience prerequisite**

Fastens glass panes into wood sash and spreads and smooths putty around edge of pane with knife to seal joints. Marks outline or pattern on glass, cuts glass, and breaks off excess glass by hand or with notched tool. Installs pre-assembled framework for windows or doors designed to be fitted with glass panels, including stained glass windows, using hand tools. Attaches backing and leveling devices to wall surface, using nails and screws, and cuts mounting strips and moldings to required lengths. Sets glass doors into frame and bolts metal hinges, handles, locks, and other hardware onto glass doors. Measures mirror and dimensions of area to be covered and determines plumb of walls or ceilings, using plumb-line and level. Assembles, fits, and attaches metal-framed glass enclosures for showers or bathtubs to framing around bath enclosure. Moves furniture to clear work site and covers floors and furnishings with drop cloths. Drives truck to installation site and unloads mirrors, equipment, and tools. Loads and arranges mirrors on truck, following sequence of deliveries. Covers mirrors with protective material to prevent damage. Measures, cuts, fits, and presses anti-glare adhesive film to glass or sprays glass with tinting solution to prevent light glare. Attaches mounting strips and moldings to surface and applies mastic cement, putty, or screws to secure mirrors into position.

**47-2131.00 Insulation Workers, Floor, Ceiling, and Wall Entry – Mid level position assuming education and experience prerequisite**

Fits, wraps, or attaches insulating materials to structures of surfaces, using hand tools or wires, following blueprint specifications. Prepare surfaces for insulation application by brushing or spreading on adhesives, cement, or asphalt or attaching metal pins to surfaces. Evenly distributes insulating materials into small spaces within floors, ceilings, or walls, using blower and hose attachments or cement mortar. Covers, seals or finishes insulated surfaces or access holes with plastic covers, canvas ships, sealant, tape, cement or asphalt mastic. Reads blueprints and selects appropriate insulation, based on the heat retaining or excluding characteristics of the material. Moves controls, buttons, or levers to start blower and regulate flow of materials through nozzle. Measures and cuts insulation for covering surfaces, using tape measure, handsaw, knife or scissors. Fills blower hopper with insulating materials.

**47-2132.00 Insulation Workers, Mechanical Entry – Mid level position assuming education and experience prerequisite**

Fits, wraps, or attaches insulating materials to structures of surfaces, using hand tools or wires, following blueprint specifications. Prepare surfaces for insulation application by brushing or spreading on adhesives, cement, or asphalt or attaching metal pins to surfaces. Reads blueprints and selects appropriate insulation, based on the heat retaining or excluding characteristics of the material. Covers, seals or finishes insulated surfaces or access holes with plastic covers,

canvas ships, sealant, tape, cement or asphalt mastic. Evenly distributes insulating materials into small spaces within floors, ceilings, or walls, using blower and hose attachments or cement mortar. Measures and cuts insulation for covering surfaces, using tape measure, handsaw, knife or scissors. Fills blower hopper with insulating materials. Moves controls, buttons, or levers to start blower and regulate flow of materials through nozzle.

**47-2141.00 Painters, Construction and Maintenance Entry – Mid level position assuming education and experience prerequisite**

Paints surfaces, using brushes, spray gun, or rollers. Cuts stencils, and brushes and sprays lettering and decorations on surfaces. Smooths surfaces, using sandpaper, scrapers, brushes, steel wool, or sanding machine. Sprays or brushes hot plastics or pitch onto surfaces. Removes fixtures, such as pictures and electric switch covers, from walls prior to painting. Covers surfaces with drop cloths or masking tape and paper to protect surface during painting. Burns off old paint, using blowtorch. Reads work order or receives instructions from supervisor or homeowner. Erects scaffolding or sets up ladders to work above ground level. Fills cracks, holes, and joints with caulk putty, plaster, or other filler, using caulking gun or putty knife. Mixes and matches colors of paint, stain, or varnish. Washes and treats surfaces with oil, turpentine, mildew remover, or other preparations. Sands surfaces between coats and polishes final coat to specified finish. Bakes finish on painted and enameled articles in baking oven. Applies paint to simulate wood grain, marble, brick, or stonework.

**47-2142.00 Paperhangers Entry – Mid – Senior level position assuming education and experience prerequisite**

Applies thinned glue to waterproof porous surfaces, using brush, roller, or pasting machine. Trims rough edges from strips, using straightedge and trimming knife. Aligns and places strips or poster sections of billboard on surface to match adjacent edges. Trims excess material at ceiling or baseboard, using knife. Applies acetic acid to damp plaster to prevent lime from bleeding through paper. Measures walls and ceiling to compute number and length of strips required to cover surface. Fills holes and cracks with plaster, using trowel. Removes paint, varnish, and grease from surfaces, using paint remover and water soda solution. Removes old paper, using water, steam machine, or chemical remover and scraper. Erects and works from scaffold. Smooths rough spots on walls and ceilings, using sandpaper. Staples or tacks advertising posters onto fences, walls, or poles. Marks vertical guideline on wall to align first strip, using plumb bob and chalk line. Smooths strips or poster sections with brush or roller to remove wrinkles and bubbles and to smooth joints. Measures and cuts strips from roll of wallpaper or fabric, using shears or razor. Mixes paste, using paste-powder and water, and brushes paste onto surface.

**47-2151.00 Pipelayers Entry – Mid level position assuming education and experience prerequisite**

Grades and levels base of trench, using tamping machine and hand tools. Checks slope, using carpenter's level or lasers. Digs trenches to desired or required depth by hand or using trenching tool. Taps and drills holes into pipe to introduce auxiliary lines or devices. Covers pipe with earth or other materials. Lays out route of pipe, following written instructions or blueprints. Lays pipes in trenches and welds, cements, glues, or otherwise connects pieces together.

**47-2152.01 Pipe Fitters Entry – Mid – Senior level position assuming education and experience prerequisite**

Plans pipe system layout, installation, or repair according to specifications. Operates motorized pump to remove water from flooded manholes, basements, or facility floors. Turns valve to shut off steam, water, or other gases or liquids from pipe section, using valve key or wrenches. Cuts and bores holes in structures, such as bulkheads, decks, walls, and mains, using hand and power tools, prior to pipe installation. Coats nonferrous piping materials by dipping in mixture of molten tin and lead to prevent erosion, or galvanic and electrolytic action. Inspects work site to determine presence of obstruction and ensure that holes will not cause structure weakness. Lays out full-scale drawings of pipe systems, supports, and related equipment, following blueprints. Modifies and maintains pipe systems and related machines and equipment components following specifications, using hand tools and power tools. Selects pipe sizes and types and related materials, such as supports, hangers, and hydraulic cylinders, according to specifications. Measures and marks pipes for cutting and threading. Inspects, examines, and tests installed systems and pipe lines, using pressure gauge, hydrostatic testing, observation, or other methods. Assembles pipes, tubes, and fittings, according to specifications. Attaches pipes to walls, structures and fixtures, such as radiators or tanks, using brackets, clamps, tools or welding equipment. Cuts, threads, and hammers pipe to specifications, using tools such as saws, cutting torches, and pipe threaders and benders.

**47-2152.02 Plumbers Entry – Mid – Senior level position assuming education and experience prerequisite**

Repairs and maintains plumbing by replacing defective washers, replacing or mending broken pipes, and opening clogged drains. Fills pipes or plumbing fixtures with water or air and observes pressure gauges to detect and locate leaks. Directs workers engaged in pipe cutting and preassembly and installation of plumbing systems and components. Cuts, threads, and bends pipe to required angle, using pipe cutters, pipe-threading machine, and pipe bending machine. Installs pipe assemblies, fittings, valves, and fixtures, such as sinks, toilets and tubs, using hand and power tools.

Studies building plans and inspects structure to determine required materials and equipment and sequence of pipe installations. Locates and marks position of pipe installations and passage holes in structures, using measuring instruments, such as ruler and level. Cuts opening in structures to accommodate pipe and pipefittings, using hand and power tools. Assembles pipe sections, tubing and fittings, using screws, bolts, solder, plastic solvent, and caulking.

**47-2152.03 Pipe Laying Fitters Entry – Mid – Senior level position assuming education and experience prerequisite**

Guides pipe into trench and signals hoist operator to move pipe until specified alignment with other pipes is achieved. Inspects joint to verify uniformity of spacing and alignment of pipe surfaces. Corrects misalignment of pipe, using sledgehammer. Inserts spacers between pipe ends.

**47-2161.00 Plasterers and Stucco Masons Entry – Mid – Senior level position assuming education and experience prerequisite**

Applies coats of plaster or stucco to walls, ceilings, or partitions of buildings, using trowel, brush, or spray gun. Installs guide wires on exterior surface of buildings to indicate thickness of plaster or stucco. Molds and installs ornamental plaster pieces, panels, and trim. Directs workers to mix plaster to desired consistency and to erect scaffolds. Applies weatherproof, decorative covering to exterior surfaces of building. Mixes mortar to desired consistency and puts up scaffolds. Creates decorative textures in finish coat, using sand, pebbles, or stones.

**47-2171.00 Reinforcing Iron and Rebar Workers Entry – Mid – Senior level position assuming education and experience prerequisite**

Determines number, sizes, shapes, and locations of reinforcing rods from blueprints, sketches, or oral instructions. Selects and places rods in forms, spacing and fastening them together, using wire and pliers. Bends steel rods with hand tools and rod bending machine. Cuts rods to required lengths, using hacksaw, bar cutters, or acetylene torch. Reinforces concrete with wire mesh. Welds reinforcing bars together, using arch-welding equipment.

**47-2181.00 Roofers Entry – Mid level position assuming education and experience prerequisite**

Fastens composition shingles or sheets to roof with asphalt, cement, or nails. Overlaps successive layers of roofing material, determining distance of overlap, using chalk line, gauge on shingling hatchet, or lines on shingles. Mops or pours hot asphalt or tar onto roof base when applying asphalt or tar and gravel to roof. Cuts roofing paper to size and nails or staples paper to roof in overlapping strips to form base for roofing materials. Applies gravel or pebbles over top layer, using rake or stiff-bristled broom. Cleans and maintains equipment. Removes snow, water, or debris from roofs prior to applying roofing materials. Insulates, soundproofs, and seals buildings with foam, using spray gun, air compressor, and heater. Punches holes in slate, tile, terra cotta, or wooden shingles, using punch and hammer. Cuts strips of flashing and fits them into angles formed by walls, vents, and intersecting roof surfaces. Aligns roofing material with edge of roof. Applies alternate layers of hot asphalt or tar and roofing paper until roof covering is completed as specified.

**47-2211.00 Sheet Metal Workers Entry – Mid – Senior level position assuming education and experience prerequisite**

Sets up and operates fabricating machines, such as shears, brakes, presses, and routers, to cut, bend, block, and form materials. Welds, solders, bolts, rivets, screws, clips, caulks, or bonds component parts to assemble products, using hand tools, power tools, and equipment. Lays out and marks dimensions and reference lines on material, using scribes, dividers, squares, and rulers. Selects gauge and type of sheet metal or nonmetallic material, according to product specifications. Inspects assemblies and installation for conformance to specifications, using measuring instruments, such as calipers, scales, dial indicators, gauges, and micrometers. Determines sequence and methods of fabricating, assembling, and installing sheet metal products, using blueprints, sketches, or product specifications. Installs assemblies in supportive framework according to blueprints, using hand tools, power tools, and lifting and handling devices. Shapes metal material over anvil, block or other form, using hand tools. Trims, files, grinds, deburrs, buffs, and smoothes surfaces, using hand tools and portable power tools.

**47-2221.00 Structural Iron and Steel Workers Entry – Mid – Senior level position assuming education and experience prerequisite**

Guides structural-steel member, using tab line (rope), or rides on member in order to guide it into position. Sets up hoisting equipment for raising and placing structural-steel members. Inserts sealing strips, wiring, insulating material, ladders, flanges, gauges, and valves, depending on type of structure being assembled. Cuts and welds steel members to make alterations, using oxyacetylene welding equipment. Bucks (holds) rivets while Riveter, Pneumatic uses air-hammer to form heads on rivets. Catches hot rivets tossed by Rivet Heater in bucket and inserts rivets in holes, using tongs.



Signals worker operating hoisting equipment to lift and place structural-steel member. Verifies vertical and horizontal alignment of structural-steel members, using plumb bob and level. Fastens structural-steel members to cable of hoist, using chain, cable, or rope. Forces structural-steel members into final position, using turnbuckles, crowbars, jacks, and hand tools. Drives drift pins through rivet holes to align rivet holes in structural-steel member with corresponding holes in previously placed member. Pulls, pushes, or pries structural-steel member into approximate position while member is supported by hoisting device. Bolts aligned structural-steel members in position until they can be permanently riveted, bolted, or welded in place.

**47-4011.00 Construction and Building Inspectors Mid – Senior level position assuming education and experience prerequisite**

Inspects bridges, dams, highways, building, wiring, plumbing, electrical circuits, sewer, heating system, and foundation for conformance to specifications and codes. Reviews and interprets plans, blueprints, specifications, and construction methods to ensure compliance to legal requirements. Measures dimensions and verifies level, alignment, and elevation of structures and fixtures to ensure compliance to building plans and codes. Approves and signs plans that meet required specifications. Records and notifies owners, violators, and authorities of violations of construction specifications and building codes. Issues violation notices, stop-work orders, and permits for construction and occupancy. Confers with owners, violators, and authorities to explain regulations and recommend alterations in construction or specifications. Reviews complaints, obtains evidence, and testifies in court that construction does not conform to code. Maintains daily logs, inventory, and inspection and construction records and prepares reports. Evaluates premises for cleanliness, including garbage disposal and lack of vermin infestation. Computes estimates of work completed and approves payment for contractors.

**47-4021.00 Elevator Installers and Repairers Entry – Mid – Senior level position assuming education and experience prerequisite**

Studies blueprints to determine layout of framework and foundations. Cuts prefabricated sections of framework, rails, and other components to specified dimensions. Completes service reports to verify conformance to prescribed standards. Locates malfunction in brakes, motor, switches, and signal and control systems, using test equipment. Inspects wiring connections, control panel hookups, door installation, and alignment and clearance of car hoist way. Operates elevator to determine power demand and tests power consumption to detect overload factors. Lubricates bearings and other parts to minimize friction. Adjusts safety controls, counter weights, and mechanism of doors. Connects electrical wiring to control panels and electric motors. Installs safety and control devices, cables, drives, rails, motors, and elevator cars. Disassembles defective unit and repairs or replaces parts, such as locks, gears, cables, and electric wiring.

**47-4031.00 Fence Erectors Entry – Mid – Senior level position assuming education and experience prerequisite**

Sets metal or wooden post in upright position in posthole. Lays out fence line, using tape measure and marks positions for postholes. Aligns posts, using line or by sighting, and verifies vertical alignment of posts with plumb bob or spirit level. Digs postholes with spade, posthole digger, or power-driven auger. Saws required lengths of lumber to make rails for wooden fence. Assembles gate and fastens gate in position, using hand tools. Mixes and pours concrete around base of post or tamps soil into posthole to embed post. Erects alternate panel, basket weave, and louvered fences. Nails pointed slats to rails to construct picket fence. Blasts rock formations with dynamite to facilitate digging of postholes. Welds metal parts together, using portable gas welding equipment. Cuts metal tubing, using pipe cutter. Completes top fence rail of metal fence by connecting tube sections, using metal sleeves. Attaches rails or tension wire along bottoms of posts to form fencing frame. Stretches wire, wire mesh, or chain link fencing between posts. Nails top and bottom rails to fence posts, or inserts them in slots on posts. Attaches fencing to frame. Inserts metal tubing through rail supports. Attaches fence rail support to post, using hammer and pliers.

**47-4041.01 Irradiated-Fuel Handlers Entry – Mid level position assuming education and experience prerequisite**

Operates machines and equipment to package, store, or transport loads of waste materials. Follows prescribed safety procedures and complies with federal laws regulating waste disposal methods. Cleans contaminated equipment for reuse, using detergents and solvents, sandblasters, filter pumps and steam cleaners. Records number of containers stored at disposal site, and specifies amount and type of equipment and waste disposed. Mixes and pours concrete into forms to encase waste material for disposal. Loads and unloads materials into containers and onto trucks, using hoists or forklift. Drives truck to convey contaminated waste to designated sea or ground location.

**47-4051.00 Highway Maintenance Workers Entry – Mid level position assuming education and experience prerequisite**

Erects, installs, and repairs guardrails, highway markers, button-type lane markers, and snow fences, using hand tools and power tools. Drives truck to transport crew and equipment to work site. Drives truck or tractor equipped with

adjustable snowplow and blower unit. Drives tractor with mower attachment to cut grass. Sets signs and cones around work area to divert traffic. Verifies alignment of markers by sight. Blends compounds to form adhesive mixture, using spoon. Measures and marks locations for installation of markers, using tape, string, or chalk. Dumps, spreads, and tamps asphalt, using pneumatic tamper to patch broken pavement.

**47-4061.00 Rail-Track Laying and Maintenance Equipment Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Drives vehicle that automatically moves and lays track or rails over section of track to be constructed, repaired, or maintained. Adjusts controls of machines that spread, shape, raise, level, and align track, according to specifications. Turns wheels of machine, using lever controls, to adjust guidelines for track alignments and grades, following specifications. Drives graders, tamping machines, brooms, and ballast-cleaning-spreading machines to redistribute gravel and ballast between rails. Lubricates machines, changes oil, and fills hydraulic reservoirs to specified levels. Observes leveling indicator arms to verify levelness and alignment of track. Strings and attaches wire-guidelines machine to rails to level or align track or rails. Pushes control to close grasping device on track or rail section to raise or move section to specified location. Engages mechanism that lays track or rail to specified gauge.

**47-4071.00 Septic Tank Servicers and Sewer Pipe Cleaners Entry – Mid – Senior level position assuming education and experience prerequisite**

Rotates cleaning rods manually with turning pin. Communicates with supervisor and other workers, using radio telephone. Updates sewer maps and manhole charting. Services, adjusts, and makes minor repairs to equipment, machines, and attachments. Drives pickup trucks to haul crew, materials, and equipment. Taps mainline sewers to install sewer saddles. Requisitions tools and equipment and prepares records showing actions taken. Notifies coworkers to dig out ruptured line or digs out shallow sewers, using shovel. Breaks asphalt and other pavement, using air hammer, pick, and shovel. Covers repaired pipe with dirt and packs backfilled excavation, using air and gasoline tamper. Inspects manholes to locate stoppage of sewer line and repaired sewer line joints to ensure tightness, prior to backfilling. Measures distance of excavation site, using plumbers' snake, tapeline, or length of cutting head within sewer and marks trenching area. Cuts damaged section of pipe with cutters, removes broken section from ditch, and replaces pipe section, using pipe sleeve. Starts machine to feed revolving cable or rods into opening, stopping machine and changing knives to conform to pipe size. Withdraws cable and observes residue for evidence of mud, roots, grease, and other deposits indicating broken or clogged sewer line. Installs rotary knives on flexible cable, mounted on reel of machine, according to diameter of pipe to be cleaned. Cleans and disinfects domestic basements and other areas flooded as result of sewer stoppages. Cleans sewage collection points and sanitary lines and repairs catch basins, manholes, culverts, and storm drains. Operates sewer cleaning equipment, including power rodder, high velocity water jet, sewer flusher, bucket machine, wayne ball, and vac-all.

**47-4091.00 Segmental Pavers Entry – Mid – Senior level position assuming education and experience prerequisite**

Lay out, cut and paste segmental paving units. Includes installed of bedding and restraining materials for the paving units.

**47-5011.00 Derrick Operators, Oil and Gas Entry – Mid – Senior level position assuming education and experience prerequisite**

Starts pumps that circulate mud through drill pipe and borehole to cool drill bit and flush out drill-cuttings. Clamps holding fixture on end of hoisting cable. Mixes drilling mud, using portable power mixer. Weighs clay. Repairs pumps. Cleans and oils pulleys, blocks, and cables. Strings cables through pulleys and blocks. Sets and bolts crown block to posts at top of derrick.

**47-5012.00 Rotary Drill Operators, Oil and Gas Entry – Mid – Senior level position assuming education and experience prerequisite**

Observes pressure gauge and moves control to regulate speed of rotary table and pressure of tools at bottom of borehole. Lowers and explodes charge in borehole to start flow of oil from well. Repairs or replaces defective parts of machinery, using hand tools. Keeps record of footage drilled, location and nature of strata penetrated, and materials used. Caps well or turns valves to regulate outflow of oil from well. Fishes for and recovers lost or broken bits, casing and drill pipes from well, using special tools. Examines drillings or core samples from bottom of well to determine nature of strata. Connects sections of drill pipe, using hand tools and powered wrenches and tongs. Counts sections of drill rod to determine depth of borehole. Examines operation of slush pumps to ensure circulation and consistency of mud (drilling fluid) in well. Positions truck-mounted derrick at drilling area specified on field map. Pushes levers and brake pedals to control draw works which lowers and raises drill pipe and casing in and out of well. Selects and changes drill bits according to nature of strata, using hand tools.



## JOB TITLES AND ASSOCIATED TASKS Sorted by Cognofile

### **47-5013.00 Service Unit Operators, Oil, Gas, and Mining Entry – Mid – Senior level position assuming education and experience prerequisite**

Operates equipment to increase oil flow from producing wells. Assembles and lowers detection instruments into wells having drill pipe, drilling tools, or other obstructions wedged in well. Assembles and operates sound wave generating and detecting mechanisms for determining fluid level in wells. Interprets instrument readings to ascertain depth of obstruction. Prepares reports of services rendered, tools used, and time required. Directs activities of preparing for and drilling around lodged obstacles or specified earth formations with specialized tools and whip stocks. Directs other worker to assemble and connect pipe and hydraulic lines of flushing equipment to wellhead. Directs drilling crew in installation of well-bottom equipment. Directs lowering of specialized equipment to point of obstruction. Observes variations on gauges, mud pumps, and pressure indicators, and listens to equipment to detect faulty operations or unusual conditions. Perforates well casing or sidewall of borehole with explosive charge. Confers with other personnel to gather information regarding size of pipes and tools and borehole conditions in wells. Plans fishing methods and selects tools for removing obstacles, such as liners, broken casing, screens, and drill pipe from wells. Starts pumps, which circulate water, oil, or other fluid through well, removing sand and other materials obstructing free flow of oil. Moves controls to back off pipe or to sever pipe at point of obstruction. Analyzes conditions of unserviceable oil or gas wells and directs recovery of lost equipment and other obstacles from boreholes. Operates hoist to lower and raise tools. Operates equipment to remove stuck pipe, casing, tools, or other obstructions from drilling wells, using specialized subsurface tools and instruments.

### **47-5021.01 Construction Drillers Entry – Mid – Senior level position assuming education and experience prerequisite**

Starts, stops, and controls drilling speed of machine and insertion of casing into hole. Drives truck or tractor to work site. Operates machine to flush earth cuttings, or blows dust from hole. Assembles and positions machine, augers, and casing pipes. Verifies depth and level of boring position. Signals crane operator to move equipment. Operates hoist to lift power line poles into position.

Retracts auger to force discharge dirt from hole. Monitors drilling operation and strata being drilled to determine need to adjust drilling or insert casing into hole.

### **47-5021.02 Well and Core Drill Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Starts and controls drilling action and lowering of well casing into well bore. Couples additional lengths of drill rod as bit advances. Assembles non-truck-mounted drilling equipment, using hand tools and power tools. Inspects core samples to determine nature of strata, or takes samples to laboratory for analysis. Drives or guides truck-mounted equipment into position, levels and stabilizes rig, and extends telescoping derrick. Lubricates machine, splices worn or broken cables, replaces parts, and builds up and repairs drill bits. Fabricates well casings. Records drilling progress and geological data. Retrieves lost equipment from bore holes, using retrieval tools and equipment. Pours water into well or pumps water or slush into well to cool drill bit and remove drillings. Changes drill bits as needed. Monitors operation of drilling equipment to determine changes in strata or variations in drilling. Withdraws drill rod from hole and extracts core sample.

### **47-5031.00 Explosives Workers, Ordnance Handling Experts, and Blasters Entry – Mid – Senior level position assuming education and experience prerequisite**

Assembles equipment, primer, explosives, and blasting cap or loads perforating gun with explosives. Fills and tamps blasting hole. Examines blast area to determine amount and kind of explosive needed and to ensure safety prior to detonation. Observes control panel to verify detonation of charge or listens for sound of blast. Repairs and services blasting and automotive equipment and electrical instruments, using hand tools. Moves, stores, and maintains inventories of high explosives. Drives truck to transport explosives and blasting equipment to blasting site. Places safety cones around blast area to alert other workers. Signals workers to clear area and hoist operator to raise equipment and sample from blast hole after detonation. Sets up and operates radio or telephone equipment to receive blast information.

Operates equipment, such as hoist, jackhammer, or drill to bore charge holes. Sets up and operates pneumatic drilling equipment to drill blast holes. Marks location and depth of charge holes for drilling, and measures depth of drilled blast holes. Ties specified lengths of delaying fuses into pattern to time sequence of explosions. Lights fuse, drops detonating device into well, or connects wires to firing device and activates device to set off blast. Plants explosive charge in structures or outside, using rope and safety harness for climbing. Lays primacord between rows of charged blast holes and ties cord into main line to form blast pattern. Cuts specified lengths of primacord and attaches primer to end of cord. Loads specified amount of explosives into blast holes, manually, or using rope or hoist.

**47-5041.00 Continuous Mining Machine Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Moves levers to sump (advance) ripper bar or boring head into face of coal seam. Drives machine into position at working face. Repairs, oils, and adjusts machine and changes cutting teeth, using wrench. Moves lever to raise and lower hydraulic safety bar that supports roof above machine until other workers complete their framing. Starts machine to gather coal and convey it to floor or shuttle car.

**47-5042.00 Mine Cutting and Channeling Machine Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Moves controls to start and position drill cutter or torch, and to advance tool into mine or quarry face. Replaces worn or broken tools and machine parts and lubricates machine. Installs casing to prevent cave-ins. Charges and sets off explosives in blasting holes. Guides and assists crew laying track for machine and resetting supports and blocking, using jacks, shovel, sledge, and pinch bar. Moves controls to start and regulate movement of conveyors to move or load material. Observes and listens to operation to detect binding or stoppage of tool or equipment malfunction. Determines location, boundaries, and depth of holes or channels to be cut. Drives mobile, truck-mounted, or track-mounted drilling or cutting machine in mine, quarry, or construction site. Repositions machine and moves controls to make additional holes or cuts.

**47-5051.00 Rock Splitters, Quarry Entry – Mid – Senior level position assuming education and experience prerequisite**

Inserts wedges and feathers into holes and drives wedges with sledgehammer to split stone from mass. Drills holes along outline with jackhammer. Cuts groove along outline, using chisel. Marks desired dimensions on stone, using rule and chalk line.

**47-5061.00 Roof Bolters, Mining Entry – Mid level position assuming education and experience prerequisite**

Drills hole into roof, according to specifications. Removes drill bit from chuck and inserts bolt into chuck. Forces bolt into hole, using hydraulic mechanism of self-propelled bolting machine.

Rotates chuck to turn bolt and open expansion head against rock formation. Positions self-propelled bolting machine, inserts drill bit in chuck, and starts drill. Installs truss bolts traversing entire ceiling span. Positions safety jack to support underground mine roof until bolts can be installed. Tests bolt for specified tension, using torque wrench. Tightens ends of anchored truss bolts, using turnbuckle.

**47-5071.00 Roustabouts, Oil and Gas Entry – Mid level position assuming education and experience prerequisite**

Bolts or nails together wood or steel framework to erect derrick. Digs holes, sets forms, and mixes and pours concrete into forms to make foundations for wood or steel derricks. Unscrews or tightens pipe, casing, tubing, and pump rods, using hand and power wrenches and tongs. Dismantles and assembles boilers and steam engine parts, using hand tools and power tools. Bolts together pump and engine parts. Connects tanks and flow lines, using wrenches.

**47-5081.00 Helpers--Extraction Workers Entry – Mid level position assuming education and experience prerequisite**

Assists workers to extract geological materials, using hand tools and equipment. Unloads materials, devices and machine parts, using hand tools. Drives moving equipment to transport materials and parts to excavation site. Sets-up and adjusts equipment used to excavate geological materials. Organizes materials and prepares site for excavation or boring, using hand tools. Observes and monitors equipment operation during extraction process. Signals workers to start extraction or boring process of geological materials. Repairs and maintains automotive and drilling equipment, using hand tools. Examines and collects geological matter, using hand tools and testing devices. Dismantles extracting and boring equipment used for excavation, using hand tools. Loads materials into gas or well hole, or equipment, using hand tools.

**49-2011.01 Automatic Teller Machine Servicers Entry – Mid level position assuming education and experience prerequisite**

Removes money canisters from ATM, and replenishes machine supplies, such as deposit envelopes, receipt paper, and cash. Counts cash and items deposited by customers, and compares to transactions indicated on transaction tape from ATM. Tests machine functions, and balances machine cash account, using electronic keypad. Corrects malfunctions, such as jammed cash or paper, or calls repair personnel when ATM needs repair. Records transaction information on form or log, and notifies designated personnel of discrepancies.

**49-2011.02 Data Processing Equipment Repairers Entry – Mid level position assuming education and experience prerequisite**

Replaces defective components and wiring. Tests faulty equipment and applies knowledge of functional operation of electronic units and systems to diagnose cause of malfunction. Adjusts mechanical parts, using hand tools and soldering iron. Maintains records of repairs, calibrations, and tests. Enters information into computer to copy program from one electronic component to another, or to draw, modify, or store schematics. Calibrates testing instruments.

**49-2011.03 Office Machine and Cash Register Servicers Entry – Mid level position assuming education and experience prerequisite**

Tests machine to locate cause of electrical problems, using testing devices, such as voltmeter, ohmmeter, and circuit test equipment. Repairs, adjusts, or replaces electrical and mechanical components and parts, using hand tools, power tools, and soldering or welding equipment. Operates machine, such as typewriter, cash register, or adding machine to test functioning or parts and mechanisms. Disassembles machine and examines parts, such as wires, gears, and bearings for wear and defects, using hand tools, power tools, and measuring devices. Reads specifications, such as blueprints, charts, and schematics to determine machine settings and adjustments. Assembles and installs machine according to specifications, using hand tools, power tools, and measuring devices. Instructs operators and servicers in operation, maintenance, and repair of machine. Cleans and oils mechanical parts to maintain machine.

**49-2021.00 Radio Mechanics Entry – Mid level position assuming education and experience prerequisite**

Locates defects, such as loose connections, broken wires, or burned out components, using schematic diagrams, test equipment, and inspection tags. Inspects wiring and soldering, and performs repairs, using soldering iron, wire cutters, pliers, and wiring diagram. Tests equipment for power output, frequency, and calibration, using oscilloscope, circuit analyzer, frequency meter, wattmeter, ammeter, and voltmeter. Replaces defective components, such as conductors, resistors, semiconductors, and integrated circuits, using soldering iron, wire cutters, and hand tools. Removes and replaces defective units that are not repairable. Installs, tests, adjusts, modifies, and repairs intercommunication systems. Tests emergency transmitter to ensure readiness for immediate use. Inserts plugs into receptacles and bolts or screws leads to terminals to connect equipment to power source, using hand tools. Adjusts receivers for maximum sensitivity and transmitters for maximum output, using frequency meter. Monitors radio range station to detect flaws in transmission and adjusts controls to eliminate flaws. Tests noise level and audio quality, using audiometer. Tests batteries with hydrometer and ammeter, and charges batteries.

**49-2022.01 Central Office and PBX Installers and Repairers Entry – Mid level position assuming education and experience prerequisite**

Tests circuits and components of malfunctioning telecommunication equipment to isolate source of malfunction, using test instruments and circuit diagrams. Analyzes test readings, computer printouts, and trouble reports to determine method of repair. Repairs or replaces defective components, such as switches, relays, amplifiers, and circuit boards, using hand tools and soldering iron. Tests and adjusts installed equipment to ensure circuit continuity and operational performance, using test instruments. Removes and remakes connections on wire distributing frame to change circuit layout, following diagrams. Routes cables and trunk lines from entry points to specified equipment, following diagrams. Enters codes to correct programming of electronic switching systems. Connects wires to equipment, using hand tools, soldering iron, or wire wrap gun. Installs preassembled or partially assembled switching equipment, switchboards, wiring frames, and power apparatus according to floor plans. Retests repaired equipment to ensure that malfunction has been corrected.

**49-2022.02 Frame Wriers, Central Office Entry – Mid level position assuming education and experience prerequisite**

Solders connections, following diagram or oral instructions. Tests circuit connections, using voltmeter or ammeter. Lubricates moving switch parts. Assists in locating and correcting malfunction in wiring on distributing frame. Cleans switches and replaces contact points, using vacuum hose, solvents, and hand tools. Strings distributing frames with connecting wires. Removes and remakes connections to change circuit layouts.

**49-2022.03 Communication Equipment Mechanics, Installers, and Repairers Entry – Mid – Senior level position assuming education and experience prerequisite**

Examines and tests malfunctioning equipment to determine defects, using blueprints and electrical measuring instruments. Assembles and installs communication equipment, such as data communication lines and equipment, computer systems, and antennas and towers, using hand tools. Tests installed equipment for conformance to specifications, using test equipment. Measures, cuts, splices, connects, solders, and installs wires and cables. Adjusts or modifies equipment in accordance with customer request or to enhance performance of equipment.

Plans layout and installation of data communications equipment. Measures distance from landmarks to identify exact installation site. Demonstrates equipment and instructs customer in use of equipment. Determines viability of site through observation, and discusses site location and construction requirements with customer. Digs holes or trenches. Answers customers' inquiries or complaints. Cleans and maintains tools, test equipment, and motor vehicles. Communicates with base, using telephone or two-way radio to receive instructions or technical advice, or to report unauthorized use of equipment. Climbs poles and ladders, constructs pole, roof mounts, or reinforcements and mixes concrete to enable equipment installation. Reviews work orders, building permits, manufacturer's instructions, and ordinances to move, change, install, repair, or remove communication equipment. Performs routine maintenance on equipment, which includes adjustment, repair, and painting. Evaluates quality of performance of installed equipment by observance and using test equipment. Disassembles equipment to adjust, repair, or replace parts, using hand tools. Repairs, replaces, or adjusts defective components.

**49-2022.04 Telecommunications Facility Examiners Mid – Senior level position assuming education and experience prerequisite**

Examines telephone transmission facilities to determine requirements for new or additional telephone services. Visits subscribers' premises to arrange for new installations, such as telephone booths and telephone poles. Climbs telephone poles or stands on truck-mounted boom to examine terminal boxes for available connections. Designates cables available for use.

**49-2091.00 Avionics Technicians Entry – Mid level position assuming education and experience prerequisite**

Assembles components, such as switches, electrical controls, and junction boxes, using hand tools and soldering iron. Lays out installation of assemblies and systems in aircraft, according to blueprints and wiring diagrams, using scribe, scale, and protractor. Sets up and operates ground support and test equipment to perform functional flight test of electrical and electronic systems. Fabricates parts and test aids as required. Interprets flight test data to diagnose malfunctions and systemic performance problems. Installs electrical and electronic components, assemblies, and systems in aircraft, using hand tools, power tools, and soldering iron. Adjusts, repairs, or replaces malfunctioning components or assemblies, using hand tools and soldering iron. Connects components to assemblies, such as radio systems, instruments, magnetos, inverters, and in-flight refueling systems, using hand tools and soldering iron. Tests components or assemblies, using circuit tester, oscilloscope, and voltmeter.

**49-2092.01 Electric Home Appliance and Power Tool Repairers Entry – Mid level position assuming education and experience prerequisite**

Disassembles appliance to examine specific mechanical and electrical parts to diagnose problem. Instructs customer regarding operation and care of appliance and provides emergency service number. Traces electrical circuits, following diagram, to locate shorts and grounds, using electrical circuit testers. Measures and performs minor carpentry procedures to area where appliance is to be installed. Records nature of maintenance or repair in log and returns to business office for further assignments. Maintains stock of parts used in on-site installation, maintenance, and repair of appliance. Cleans, lubricates, and touched up minor scratches on newly installed or repaired appliance. Replaces worn and defective parts, such as switches, bearings, transmissions, belts, gears, circuit boards, or defective wiring. Reassembles unit, making necessary adjustments to ensure efficient operation. Connects appliance to power source and uses test instruments to calibrate timers and thermostats and to adjust contact points. Observes and examines appliance during operation to detect specific malfunction, such as loose parts or leaking fluid.

**49-2092.02 Electric Motor and Switch Assemblers and Repairers Entry – Mid level position assuming education and experience prerequisite**

Assembles electrical parts, such as alternators, generators, starting devices, and switches, following schematic drawings, using hand, machine, and power tools. Repairs and rebuilds defective mechanical parts in electric motors, generators, and related equipment, using hand tools and power tools. Tests for overheating, using speed gauges and thermometers. Replaces defective parts, such as coil leads, carbon brushes, and connecting wires, using soldering equipment. Rewires electrical systems and repairs or replaces electrical accessories. Disassembles defective unit, using hand tools. Cuts and removes parts, such as defective coils and insulation. Tests charges and replaces batteries. Adjusts working parts, such as fan belt tension, voltage output, contacts and springs, using hand tools, and verifies corrections, using gauges. Lifts units or parts, such as motors or generators, using crane or chain hoist. Scrapes and cleans units or parts, using cleaning solvent, and lubricates moving parts. Records repairs required, parts used, and labor time. Re-faces, reams, and polishes commutators and machine parts to specified tolerances, using machine tools. Cuts and forms insulation and inserts insulation into armature, rotor, or stator slots. Inspects parts for wear or damage, or reads work order or schematic drawings to determine required repairs. Measures velocity, horsepower, r.p.m., amperage, circuitry, and voltage of unit or parts, using electrical meters and mechanical testing devices. Reassembles repaired electric motors

to specified requirements and ratings, using hand tools and electrical meters. Installs, secures, and aligns parts, using hand tools, welding equipment, and electrical meters. Rewinds coils on core while core is in slots, or makes replacement coils, using coil-winding machine.

**49-2092.03 Battery Repairers Entry – Mid level position assuming education and experience prerequisite**

Inspects electrical connections, wiring charging relays, charging resistance box, and storage batteries, following wiring diagram. Removes and disassembles cells and cathode assembly, using tension handles, pry bars, and hoist, and cuts wires to faulty cells. Connects battery-to-battery charger and adjusts rheostat to start flow of electricity into battery. Repairs or adjusts defective parts, using hand tools, or power tools. Disconnects electrical leads and removes battery, using hand tools and hoist. Installs recharged or repaired battery or cells, using hand tools. Cleans cells, cell assemblies, glassware, leads, electrical connections, and battery poles, using scraper, steam, water, emery cloth, power grinder, or acid. Fabricates and assembles electrolytic cell parts for storage batteries. Compiles operating and maintenance records. Seals joints with putty, mortar, and asbestos, using putty extruder and knife. Repairs battery charging equipment. Measures cathode blade and anode, using ruler, and rate of mercury flow, using stopwatch. Secures cell on rocker mechanism or attaches assemblies, using bolts or cement. Positions and levels, or signals worker to position and level, cell, anode, or cathode, using hoist and leveling jacks. Adds water and acid to battery cells to obtain specified concentration. Replaces defective parts, such as cell plates, fuses, lead parts, switches, wires, anodes, cathodes, and rheostat. Tests condition, fluid level, and specific gravity of electrolyte cells, using voltmeter, hydrometer, and thermometer. Inspects battery for defects, such as dented cans, damaged carbon rods and terminals, and defective seals.

**49-2092.04 Transformer Repairers Entry – Mid level position assuming education and experience prerequisite**

Cleans transformer case, using scrapers and solvent. Reassembles transformer. Replaces worn or defective parts, using hand tools. Inspects transformer for defects, such as cracked weldments. Signals crane operator to raise heavy transformer component subassemblies. Secures input and output wires in position. Winds replacement coils, using coil-winding machine. Dismantles lamination assembly, preparatory to cleaning and inspection. Fills reassembled transformer with oil until coils are submerged. Drains and filters transformer oil. Disassembles distribution, streetlight, or instrument transformers.

**49-2092.05 Electrical Parts Re-Conditioners Entry – Mid level position assuming education and experience prerequisite**

Solders, wraps, and coats wires to ensure proper insulation. Inserts and hammers ready-made coils in place. Bolts porcelain insulators to wood parts to assemble hot stools. Cleans and polishes parts, using solvent and buffing wheel. Tests armatures and motors to ensure proper operation. Solders ends of coils to commutator segments. Disassembles salvaged equipment used in electric power systems, such as air circuit breakers and lightning arresters, using hand tools, and discards non-repairable parts. Replaces broken and defective parts. Cuts insulating material to fit slots on armature core, and places material in bottom of core slots. Winds new coils on armatures of generators and motors.

**49-2092.06 Hand and Portable Power Tool Repairers Entry – Mid level position assuming education and experience prerequisite**

Repairs or replaces tools and defective parts, such as handles, vises, pliers, or metal buckets, using soldering tool, gas torch, power tools, or hand tools. Cleans polishing and buffing wheels, using steam cleaning machine, to remove abrasives and bonding materials and salvages cloth from wheel. Sprays, brushes, or recoats surface of polishing wheel and places it in oven to dry. Maintains stock of parts. Records nature and extent of repairs performed. Examines and tests tools to determine defects or cause of malfunction, using hand and power tools, observation, and experience. Disassembles and reassembles tools, using hand tools, power tools, or arbor press. Verifies and adjusts alignment and dimensions of parts, using gauges and tracing lathe. Sharpens tools, such as picks, shovels, screwdrivers, and scoops, using bench grinder and emery wheel.

**49-2093.00 Electrical and Electronics Installers and Repairers, Transportation Equipment Entry – Mid level position assuming education and experience prerequisite**

Adjusts, repairs, or replaces defective wiring and relays in ignition, lighting, air-conditioning, and safety control systems, using electrician's tools. Cuts openings and drills holes for fixtures, outlet boxes, and fuse holders, using electric drill and router. Visually inspects and tests electrical system or equipment, using testing devices such as oscilloscope, voltmeter, and ammeter, to determine malfunctions. Estimates cost of repairs based on parts and labor charges. Confers with customer to determine nature of malfunction. Repairs or rebuilds starters, generators, distributors, or door controls using electrician's tools. Installs fixtures, outlets, terminal boards, switches, and wall boxes using hand tools. Measures, cuts, and installs framework and conduit to support and connect wiring, control panels, and junction boxes using hand tools.

Splices wires with knife or cutting pliers, and solders connections to fixtures, outlets, and equipment. Installs electrical equipment, such as air-conditioning, heating, or ignition systems, generator brushes, and commutators using hand tools.

**49-2094.00 Electrical and Electronics Repairers, Commercial and Industrial Equipment Entry – Mid level position assuming education and experience prerequisite**

Analyzes technical requirements of customer desiring to utilize electronic equipment, and performs installation and maintenance duties. Inspects components of equipment for defects, such as loose connections and frayed wire, and for accuracy of assembly and installation. Tests faulty equipment, using test equipment and applying knowledge of functional operation of electronic unit and systems, to diagnose malfunction. Advises management regarding customer satisfaction, product performance, and suggestions for product improvements. Signs overhaul documents for equipment replaced or repaired. Consults with customer, supervisor, and engineers to plan layout of equipment and to resolve problems in system operation and maintenance. Enters information into computer to copy program or to draw, modify, or store schematics, applying knowledge of software package used. Maintains records of repairs, calibrations, and tests. Converses with equipment operators to ascertain whether mechanical or human error contributed to equipment breakdown. Studies blueprints, schematics, manuals, and other specifications to determine installation procedures. Operates equipment to demonstrate use of equipment and to analyze malfunctions. Determines feasibility of using standardized equipment, and develops specifications for equipment required to perform additional functions. Replaces or repairs defective components, using hand tools and technical documents. Adjusts defective components, using hand tools and technical documents. Installs equipment in industrial or military establishments and in aircraft and missiles. Calibrates testing instruments and installed or repaired equipment to prescribed specifications.

**49-2095.00 Electrical and Electronics Repairers, Powerhouse, Substation, and Relay Entry – Mid – Senior level position assuming education and experience prerequisite**

Repairs, replaces, and cleans equipment, such as brushes, commutators, windings, bearings, relays, switches, controls, and instruments. Disconnects voltage regulators, bolts, and screws, and connects replacement regulators to high-voltage lines. Prepares reports of work performed. Analyzes test data to diagnose malfunctions and evaluate effect of system modifications. Paints, repairs, and maintains buildings and sets forms and pours concrete footings for installation of heavy equipment. Notifies personnel of need for equipment shutdown requiring changes from normal operation to maintain service. Tests insulators and bushings of equipment by inducing voltage across insulation, using testing apparatus, and calculating insulation loss. Repairs or rebuilds circuit breakers, transformers, and lightning arresters by replacing worn parts. Inspects and tests equipment and circuits to identify malfunction or defect, using wiring diagrams and testing devices such as ohmmeters, voltmeters, or ammeters. Tests oil in circuit breakers and transformers for dielectric strength and periodically refills.

**49-2096.00 Electronic Equipment Installers and Repairers, Motor Vehicles Entry – Mid level position assuming education and experience prerequisite**

Adjusts, repairs, or replaces defective wiring and relays in ignition, lighting, air-conditioning, and safety control systems, using electrician's tools. Estimates cost of repairs based on parts and labor charges. Confers with customer to determine nature of malfunction. Cuts openings and drills holes for fixtures, outlet boxes, and fuse holders, using electric drill and router. Installs electrical equipment, such as air-conditioning, heating, or ignition systems, generator brushes, and commutators, using hand tools. Installs fixtures, outlets, terminal boards, switches, and wall boxes, using hand tools. Measures, cuts, and installs framework and conduit to support and connect wiring, control panels, and junction boxes, using hand tools. Visually inspects and tests electrical system or equipment, using testing devices such as oscilloscope, voltmeter, and ammeter, to determine malfunctions. Splices wires with knife or cutting pliers, and solders connections to fixtures, outlets, and equipment. Repairs or rebuilds starters, generators, distributors, or door controls, using electrician's tools.

**49-2097.00 Electronic Home Entertainment Equipment Installers and Repairers Entry – Mid level position assuming education and experience prerequisite**

Disassembles equipment and repairs or replaces loose, worn, or defective components and wiring, using hand tools and soldering iron. Positions or mounts speakers and wires speakers to console. Computes cost estimates for labor and materials. Analyzes and tests products and parts to locate defects or source of trouble. Confers with customers to determine nature of problem or to explain repairs. Makes service calls and repairs units in customers' homes or returns unit to shop for major repair. Installs electronic equipment or instruments, such as televisions, radios, audio-visual equipment, and organs, using hand tools. Tests circuits, using schematic diagrams, service manuals, and testing instruments such as voltmeters, oscilloscopes, and audiogenerators. Tunes or adjusts equipment and instruments, according to specifications, to obtain optimum visual or auditory reception.





## JOB TITLES AND ASSOCIATED TASKS Sorted by Cognofile

### **49-2098.00 Security and Fire Alarm Systems Installers Entry – Mid level position assuming education and experience prerequisite**

Install, program, maintain, and repair security and fire alarm wiring and equipment. Ensure that work is in accordance with relevant codes.

### **49-3011.01 Airframe-and-Power-Plant Mechanics Entry – Mid level position assuming education and experience prerequisite**

Adjusts, aligns, and calibrates aircraft systems, using hand tools, gauges, and test equipment. Examines and inspects engines or other components for cracks, breaks, or leaks. Disassembles and inspects parts for wear, warping, or other defects. Tests engine and system operations, using testing equipment, and listens to engine sounds to detect and diagnose malfunctions. Assembles and installs electrical, plumbing, mechanical, hydraulic, and structural components and accessories, using hand tools and power tools. Reads and interprets aircraft maintenance manuals and specifications to determine feasibility and method of repairing or replacing malfunctioning or damaged components. Modifies aircraft structures, space vehicles, systems, or components, following drawings, engineering orders and technical publications. Removes engine from aircraft or installs engine, using hoist or forklift truck. Services and maintains aircraft systems by performing tasks, such as flushing crankcase, cleaning screens, greasing moving parts, and checking brakes. Repairs, replaces, and rebuilds aircraft structures, functional components, and parts, such as wings and fuselage, rigging, and hydraulic units.

### **49-3011.02 Aircraft Engine Specialists Entry – Mid – Senior level position assuming education and experience prerequisite**

Replaces or repairs worn, defective, or damaged components, using hand tools, gauges, and testing equipment. Disassembles and inspects engine parts, such as turbine blades and cylinders, for wear, warping, cracks, and leaks. Reassembles engine and installs engine in aircraft. Tests engine operation, using test equipment such as ignition analyzer, compression checker, distributor timer, and ammeter, to identify malfunction. Services and maintains aircraft and related apparatus by performing activities, such as flushing crankcase, cleaning screens, and lubricating moving parts. Adjusts, repairs, or replaces electrical wiring system and aircraft accessories. Services, repairs, and rebuilds aircraft structures, such as wings, fuselage, rigging, and surface and hydraulic controls, using hand or power tools and equipment. Reads and interprets manufacturers' maintenance manuals, service bulletins, and other specifications to determine feasibility and methods of repair. Removes engine from aircraft, using hoist or forklift truck. Listens to operating engine to detect and diagnose malfunctions, such as sticking or burned valves.

### **49-3011.03 Aircraft Body and Bonded Structure Repairers Entry – Mid level position assuming education and experience prerequisite**

Reinstalls repaired or replacement parts for subsequent riveting or welding, using clamps and wrenches. Trims and shapes replacement section to specified size and fits and secures section in place, using adhesives, hand tools, and power tools. Locates and marks dimension and reference lines on defective or replacement part, using templates, scribes, compass, and steel rule. Communicates with other workers to fit and align heavy parts or expedite processing of repair parts. Cures bonded structure, using portable or stationary curing equipment. Spreads plastic film over area to be repaired to prevent damage to surrounding area. Cleans, strips, primes, and sands structural surfaces and materials prior to bonding. Removes or cuts out defective part or drills holes to gain access to internal defect or damage, using drill and punch. Reads work orders, blueprints, and specifications or examines sample or damaged part or structure to determine repair or fabrication procedures and sequence of operations. Repairs or fabricates defective section or part, using metal fabricating machines, saws, brakes, shears, and grinders.

### **49-3021.00 Automotive Body and Related Repairers Entry – Mid level position assuming education and experience prerequisite**

Positions dolly block against surface of dented area and beats opposite surface to remove dents, using hammer. Straightens bent automobile or other vehicle frames, using pneumatic frame-straightening machine. Fills depressions with body filler and files, grinds, and sands repaired surfaces, using power tools and hand tools. Paints and sands repaired surface, using paint spray gun and motorized sander. Measures and marks vinyl material and cuts material to size for roof installation, using rule, straightedge, and hand shears. Soaks fiberglass matting in resin mixture and applies layers matting over repair area to specified thickness. Peels separating film from repair area and washes repaired surface with water. Cuts and tapes plastic separating film to outside repair area to avoid damaging surrounding surfaces during repair procedure. Reads specifications or confers with customer to determine custom modifications to alter appearance of vehicle. Removes upholstery, accessories, electrical window-and-seat-operating equipment, and trim to gain access to vehicle body and fenders. Cleans work area, using air hose to remove damaged material and to remove discarded

fiberglass strips used in repair procedures. Adjusts or aligns headlights, wheels, and brake system. Examines vehicle to determine extent and type of damage.

Mixes polyester resin and hardener to be used in restoring damaged area. Cuts away damaged fiberglass from automobile body, using air grinder. Removes damaged fenders and panels, using wrenches and cutting torch, and installs replacement parts, using wrenches or welding equipment. Fits and secures windows, vinyl roof, and metal trim to vehicle body, using caulking gun, adhesive brush, and mallet. Cuts opening in vehicle body for installation of customized windows, using templates, and power shears or chisel.

**49-3022.00 Automotive Glass Installers and Repairers Entry – Mid level position assuming education and experience prerequisite**

Installs precut replacement glass to replace curved or custom-shaped windows. Removes broken or damaged glass windshield or window-glass from motor vehicles, using hand tools to remove screws from frame holding glass. Applies moisture-proofing compound along glass edges and installs glass into windshield- or glass-frame in door or side panel of vehicle. Installs rubber-channeling strip around edge of glass or frame to weatherproof or to prevent rattling. Replaces or adjusts motorized or manual window-raising mechanisms. Obtains windshield for specific automobile make and model from stock and examines for defects prior to installation. Holds cut or uneven edge of glass against automated abrasive belt to shape or smooth edges. Cuts flat safety glass according to specified pattern, using glasscutter.

**49-3023.01 Automotive Master Mechanics Mid – Senior level position assuming education and experience prerequisite**

Repairs and overhauls defective automotive units, such as engines, transmissions, or differentials. Repairs or replaces parts, such as pistons, rods, gears, valves, and bearings. Overhauls or replaces carburetors, blowers, generators, distributors, starts, and pumps. Repairs manual and automatic transmissions. Installs and repairs accessories, such as radios, heaters, mirrors, and windshield wipers. Replaces and adjusts headlights. Aligns front end. Repairs damaged automobile bodies.

Rebuilds parts, such as crankshafts and cylinder blocks. Examines vehicles and discusses extent of damage or malfunction with customer. Repairs radiator leaks. Repairs or replaces shock absorbers. Rewires ignition system, lights, and instrument panel.

Repairs, relines, replaces, and adjusts brakes.

**49-3023.02 Automotive Specialty Technicians Entry – Mid level position assuming education and experience prerequisite**

Repairs, installs, and adjusts hydraulic and electromagnetic automatic lift mechanisms used to raise and lower automobile windows, seats, and tops. Rebuilds, repairs, and tests automotive injection units. Aligns and repairs wheels, axles, frames, torsion bars, and steering mechanisms of automobiles.

Converts vehicle fuel systems from gasoline to butane gas operations and repairs and services operating butane fuel units. Examines vehicle, compiles estimate of repair costs, and secures customer approval to perform repairs.

Tunes automobile engines and tests electronic computer components. Inspects, tests, repairs, and replaces automotive cooling systems and fuel tanks. Inspects and tests new vehicles for damage, records findings, and makes repairs.

Repairs and replaces defective ball joint suspension, brake shoes, and wheel bearings. Repairs, replaces, and adjusts defective carburetor parts and gasoline filters. Installs and repairs automotive air-conditioning units. Removes and replaces defective mufflers and tailpipes from automobiles. Repairs and aligns defective wheels of automobiles.

Repairs, overhauls, and adjusts automobile brake systems. Repairs and rebuilds clutch systems. Repairs and replaces automobile leaf springs.

**49-3031.00 Bus and Truck Mechanics and Diesel Engine Specialists Entry – Mid – Senior level position assuming education and experience prerequisite**

Inspects defective equipment and diagnoses malfunctions, using test instruments, such as motor analyzers, chassis charts, and pressure gauges. Reconditions and replaces parts, pistons, bearings, gears, and valves. Attaches test instruments to equipment and reads dials and gauges to diagnose malfunctions. Changes oil, checks batteries, repairs tires and tubes, and lubricates equipment and machinery. Adjusts brakes, aligns wheels, tightens bolts and screws, and reassembles equipment. Examines and adjusts protective guards, loose bolts, and specified safety devices.

Operates valve-grinding machine to grind and reset valves. Reads job orders and observes and listens to operating equipment to ensure conformance to specifications or to determine malfunctions. Disassembles and overhauls internal combustion engines, pumps, generators, transmissions, clutches, and rear ends. Inspects and verifies dimensions and clearances of parts to ensure conformance to factory specifications. Inspects, repairs, and maintains automotive and mechanical equipment and machinery, such as pumps and compressors.

**49-3041.00 Farm Equipment Mechanics Entry – Mid – Senior level position assuming education and experience prerequisite**

Repairs or replaces defective parts, using hand tools, milling and woodworking machines, lathes, welding equipment, grinders, or saws. Examines and listens to machines, motors, gas and diesel engines, and equipment to detect malfunctioning. Tests and replaces electrical components and wiring, using test meter, soldering equipment, and wire strippers. Records type and cause of defect on agricultural equipment. Drives truck to haul tools and equipment to work site. Fabricates new metal parts, using drill press, engine lathe, and other machine tools. Reads inspection reports and examines equipment to determine type and extent of defect. Reassembles, adjusts, and lubricates machines and equipment, using hand tools. Dismantles defective machines, using hand tools. Installs and repairs agricultural plumbing systems. Installs and maintains self-propelled irrigation system, using truck-mounted crane, wrenches, tube cutter, and pipe threader.

**49-3042.00 Mobile Heavy Equipment Mechanics, Except Engines Entry – Mid – Senior level position assuming education and experience prerequisite**

Repairs and replaces damaged or worn parts. Welds or cuts metal, and welds broken parts and structural members, using electric or gas welder. Operates and inspects machines or heavy equipment to diagnose defects. Directs workers engaged in cleaning parts and assisting with assembly or disassembly of equipment. Immerses parts in tanks of solvent or sprays parts with grease solvent to clean parts. Adjusts, maintains, and repairs or replaces engines and assemblies, including transmissions and crawler heads, using hand tools, jacks, and cranes. Dismantles and reassembles heavy equipment, using hoists and hand tools. Overhauls and tests machines or equipment to ensure operating efficiency. Examines parts for damage or excessive wear, using micrometers and gauges.

**49-3043.00 Rail Car Repairers Entry – Mid – Senior level position assuming education and experience prerequisite**

Repairs, reassembles, and replaces defective parts, metal sections, or components, using hand tools, torque wrench, power tools, and welding equipment. Disassembles units, such as water pump, control valve, governor, distributor, windshield wiper motor, compressor and roller bearings. Replaces defective wiring and insulation, and tightens electrical connections, using hand tools. Cleans units and components, using compressed air blower. Records condition of cars, repairs made, and other repair work to be performed. Removes locomotive, car mechanical unit, or other component, using pneumatic hoist and jack, pinch bar, hand tools, and cutting torch. Tests electric systems of cars, using ammeter and by operating light and signal switches. Measures diameter of axle wheel seats, using micrometer, and marks dimension on axle for boring of wheels to specified dimensions. Measures sections and drills holes to prepare replacement sections for reassembly. Repairs window sash frames, attaches weather stripping, and channels to frame, and replaces window glass, using hand tools. Adjusts repaired or replaced units as needed, following diagrams. Tests units before and after repairs for operability. Examines car roof for wear and damage and repairs defective sections, using roofing material, cement, nails, and waterproof paint. Installs and repairs interior flooring, fixtures, walls, plumbing, steps, and platforms. Inspects components, such as bearings, seals, gaskets, wheels, truck and brake assemblies, air cylinder reservoirs, valves, and coupler assemblies. Aligns car sides, for installation of car ends and crossties, using width gauge, turnbuckle, and wrench.

**49-3051.00 Motorboat Mechanics Entry – Mid – Senior level position assuming education and experience prerequisite**

Tests motor for conformance to specifications and operations, while motor is running in tank, using tachometers, monometers, voltmeters, ammeter, and stroboscope. Examines propeller and propeller shafts, and aligns, repairs, or replaces defective parts. Starts motor and listens to and inspects it for signs of malfunctioning, such as smoke, excessive vibration, misfiring, and missing or broken parts. Adjusts generator and replaces faulty wiring, using hand tools and soldering iron. Writes test report to indicate acceptance or reason for rejection of motor. Mounts motor to boat and operates boat at various speeds on waterway to conduct operational tests. Sets starter lock, and aligns and repairs steering or throttle controls, using gauges, screwdrivers, and wrenches. Operates machine tools, such as lathes, mills, drills, and grinders, to repair or rework parts, such as cams, rods, crankshaft, and propeller. Adjusts carburetor mixture, electrical point settings, and timing, while motor is running in water-filled test tank. Analyzes test results, assembles and inspects motor for defective parts, using mechanic's hand tools and gauges. Replaces parts, such as gears, magneto points, piston rings, and spark plugs, and reassembles engine. Repairs mechanical equipment of engines, such as power-tilt, bilge pumps, or power take-offs. Idles motor and observes thermometer to determine effectiveness of cooling system.

**49-3052.00 Motorcycle Mechanics Entry – Mid level position assuming education and experience prerequisite**

Dismantles engine and repairs or replaces defective parts, such as magneto, carburetor, and generator. Reassembles and tests subassembly unit. Listens to engine, examines vehicle's frame, and confers with customer to determine nature

and extent of malfunction or damage. Connects test panel to engine and measures generator output, ignition timing, and other engine performance indicators. Disassembles subassembly unit and examines condition, movement or alignment of parts visually or using gauges. Replaces defective parts, using hand tools, arbor press, flexible power press, or power tools. Hammers out dents and bends in frame, welds tears and breaks, and reassembles frame and reinstalls engine. Repairs or replaces other parts, such as headlight, horn, handlebar controls, gasoline and oil tanks, starter, and muffler. Repairs and adjusts motorcycle subassemblies such as forks, transmissions, brakes, and drive chain, according to specifications. Removes cylinder heads, grinds valves, and scrapes off carbon, and replaces defective valves, pistons, cylinders and rings, using hand tools and power tools.

**49-3053.00 Outdoor Power Equipment and Other Small Engine Mechanics Entry – Mid level position assuming education and experience prerequisite**

Repairs or replaces defective parts, such as water pump, carburetor, thermostat, gears, solenoid, pistons, valves, and crankshaft, using hand tools. Records repairs made, time spent, and parts used. Positions and bolts engine to engine stand.

Grinds, reams, re-bores, and re-taps parts to obtain specified clearances, using grinders, lathes, taps, reamers, boring machines, and micrometer. Tests and inspects engine to determine malfunctions and locate missing and broken parts, using diagnostic instruments. Repairs and maintains gas internal-combustion engines that power electric generators, compressor, and similar equipment. Tests and repairs magnetos used in gasoline and diesel engines, using meters, gauges, and hand tools. Repairs and maintains portable saws powered by internal combustion engines, following manufacturer's repair manuals and using hand tools. Dismantles engines, using hand tools, examines parts for defects, and cleans parts. Reassembles engines and listens to engines in action to detect operational difficulties. Tests and repairs turbo or superchargers. Repairs fractional-horsepower gasoline engines used to power lawn mowers, garden tractors, and similar machines. Adjusts points, valves, carburetor, distributor and spark plug gaps, using feeler gauges.

**49-3091.00 Bicycle Repairers Entry – Mid level position assuming education and experience prerequisite**

Installs, repairs, and replaces equipment or accessories, such as handlebars, stands, lights, and seats. Disassembles axle to repair, adjust, and replace defective parts, using hand tools. Welds broken or cracked frame together, using oxyacetylene torch and welding rods. Paints bicycle frame, using spray gun or brush. Repairs holes in tire tubes, using scraper and patch. Assembles new bicycles. Shapes replacement parts, using bench grinder. Installs and adjusts speed and gear mechanisms.

Aligns wheels.

**49-3092.00 Recreational Vehicle Service Technicians Entry – Mid level position assuming education and experience prerequisite**

Locates and repairs frayed wiring, broken connections, or incorrect wiring, using ohmmeter, soldering iron, tape, and hand tools. Inspects, examines, and tests operation of parts or systems to be repaired and to verify completeness of work performed. Repairs leaks with caulking compound or replaces pipes, using pipe wrench. Connects water hose to inlet pipe of plumbing system and tests operation of toilets and sinks. Connects electrical system to outside power source and activates switches to test operation of appliances and light fixtures. Seals open side of modular units to prepare them for shipment, using polyethylene sheets, nails, and hammer. Resets hardware, using chisel, mallet, and screwdriver.

Refinishes wood surfaces on cabinets, doors, moldings, and floors, using power sander, putty, spray equipment, brush, paints, or varnishes. Opens and closes doors, windows, and drawers to test their operation and trims edges to fit, using jack-plane or drawknife. Lists parts needed, estimates costs, and plans work procedure, using parts list, technical manuals, and diagrams. Confers with customer or reads work order to determine nature and extent of damage to unit. Removes damaged exterior panels, repairs and replaces structural frame members, and seals leaks, using hand tools. Repairs plumbing and propane gas lines, using caulking compounds and plastic or copper pipe.

**49-9012.01 Electric Meter Installers and Repairers Entry – Mid level position assuming education and experience prerequisite**

Mounts and installs meter and other electric equipment, such as time clocks, transformers, and circuit breakers, using electrician's hand tools. Repairs electric meters and components, such as transformers and relays, and changes faulty or incorrect wiring using hand tools. Makes adjustments to meter components, such as setscrews or timing mechanism to conform to specifications. Cleans meter parts, using chemical solutions, brushes, sandpaper, and soap and water.

Disconnects and removes electric power meters when defective or when customer accounts are in default using hand tools. Records meter reading and installation data on meter cards, work orders, or field service orders. Splices and connects cable from meter or current transformer to pull box or switchboard using hand tools to provide power. Inspects and tests electric meters, relays, and power, to detect cause of malfunction and inaccuracy using hand tools and testing equipment.



## JOB TITLES AND ASSOCIATED TASKS Sorted by Cognofile

### **49-9012.02 Valve and Regulator Repairers Entry – Mid level position assuming education and experience prerequisite**

Replaces, repairs or adjusts defective valve or regulator parts and tightens attachments, using hand tools, power tools, and welder. Tests valves and regulators for leaks, temperature and pressure settings, using precision testing equipment. Examines valves or mechanical control device parts for defects, dents, or loose attachments. Measures salvageable parts removed from mechanical control devices for conformance to standards or specifications, using gauges, micrometers, and calipers. Dips valves and regulators in molten lead to prevent leakage and paints valves, fittings, and other devices, using spray gun. Cleans corrosives and other deposits from serviceable parts, using solvents, wire brushes, or sandblaster. Advises customers on proper installation of valves or regulators and related equipment. Records repair work, inventories parts, and orders new parts. Correlates testing data, performs technical calculations, and writes test reports to record data. Lubricates wearing surfaces of mechanical parts, using oils or other lubricants. Disassembles mechanical control devices or valves, such as regulators, thermostats, or hydrants, using power tools, hand tools, and cutting torch.

### **49-9012.03 Meter Mechanics Entry – Mid level position assuming education and experience prerequisite**

Adjusts meter and repeats test until meter registration is within specified limits. Inspects, repairs, and maintains gas meters at wells or processing plants. Analyzes test results to determine cause of persistent meter registration errors. Reassembles meter and meter parts using soldering gun, power tools, or hand tools. Caps meter housing and activates controls on paint booth to spray paint meter case. Records test results, materials used, and meters needing repair on log or card and segregates meters requiring repair. Cleans plant growth, scale, and rust from meter housing using wire brush, buffer, sandblaster, or cleaning compounds. Lubricates moving meter parts using oil gun. Dismantles meter and replaces defective parts, such as case, shafts, gears, disks, and recording mechanisms using soldering iron and hand tools. Connects gas, oil, water, or air meter to test apparatus to detect leaks.

### **49-9021.01 Heating and Air Conditioning Mechanics Entry – Mid level position assuming education and experience prerequisite**

Installs, connects, and adjusts thermostats, humidistats, and timers, using hand tools. Repairs or replaces defective equipment, components, or wiring. Joins pipes or tubing to equipment and to fuel, water, or refrigerant source, to form complete circuit. Tests electrical circuits and components for continuity, using electrical test equipment. Fabricates, assembles, and installs duct work and chassis parts, using portable metal-working tools and welding equipment. Cuts and drills holes in floors, walls, and roof to install equipment, using power saws and drills. Measures, cuts, threads, and bends pipe or tubing, using pipe fitter's tools. Reassembles equipment and starts unit to test operation. Lays out and connects electrical wiring between controls and equipment according to wiring diagram, using electrician's hand tools. Wraps pipes in insulation and secures it in place with cement or wire bands. Studies blueprints to determine configuration of heating or cooling equipment components. Inspects inoperative equipment to locate source of trouble. Discusses heating-cooling system malfunctions with users to isolate problems or to verify malfunctions have been corrected. Inspects and tests system to verify system compliance with plans and specifications and to detect malfunctions. Adjusts system controls to setting recommended by manufacturer to balance system, using hand tools. Installs auxiliary components to heating-cooling equipment, such as expansion and discharge valves, air ducts, pipes, blowers, dampers, flues and stokers, following blueprints. Tests pipe or tubing joints and connections for leaks, using pressure gauge or soap-and-water solution. Assembles, positions, and mounts heating or cooling equipment, following blueprints. Disassembles system and cleans and oils parts.

### **49-9021.02 Refrigeration Mechanics Entry – Mid level position assuming education and experience prerequisite**

Mounts compressor, condenser, and other components in specified location on frame using hand tools and acetylene welding equipment. Replaces or adjusts defective or worn parts to repair system and reassembles system. Cuts, bends, threads, and connects pipe to functional components and water, power, or refrigeration system. Installs expansion and control valves using acetylene torch and wrenches. Assembles structural and functional components, such as controls switches, gauges, wiring harnesses, valves, pumps, compressors, condensers, cores, and pipes. Brazes or solders parts to repair defective joints and leaks. Drills holes and installs mounting brackets and hangers into floor and walls of building. Fabricates and assembles components and structural portions of refrigeration system using hand tools, power tools, and welding equipment. Keeps records of repairs and replacements made and causes of malfunctions. Reads blueprints to determine location, size, capacity, and type of components needed to build refrigeration system. Tests lines, components, and connections for leaks. Lays out reference points for installation of structural and functional components using measuring instruments. Dismantles malfunctioning systems and tests components using electrical, mechanical, and pneumatic testing equipment. Observes system operation using gauges and instruments, and adjusts or replaces mechanisms and parts, according to specifications. Adjusts valves according to specifications and charges system with specified type of refrigerant. Lifts and aligns components into position using hoist or block and tackle.

**49-9031.01 Home Appliance Installers Entry – Mid level position assuming education and experience prerequisite**

Observes and tests operation of appliances, such as refrigerators, washers, and dryers, and makes initial installation adjustments accordingly. Disassembles and re-installs existing kitchen cabinets and assembles and installs prefabricated kitchen cabinets in conjunction with appliance installation. Levels washing machines and connects hoses to water pipes, using plumbing and other hand tools. Lights and adjusts pilot lights on gas stoves and examines valves and burners for gas leakage and specified flame. Advises customers regarding use and care of appliance and provides them with emergency service number. Levels refrigerators, adjusts doors, and connects water lines to water pipes for ice makers and water dispensers, using hand tools.

**49-9031.02 Gas Appliance Repairers Entry – Mid level position assuming education and experience prerequisite**

Measures, cuts, and threads pipe and connects it to feeder lines and equipment or appliance using rule and hand tools. Assembles new or reconditioned appliances. Tests and examines pipelines and equipment to locate leaks and faulty connections and to determine pressure and flow of gas. Dismantles meters and regulators, and replaces defective pipes, thermocouples, thermostats, valves, and indicator spindles using hand tools.

**49-9041.00 Industrial Machinery Mechanics Entry – Mid – Senior level position assuming education and experience prerequisite**

Confers with operators and observes, tests, and evaluates operation of machinery and equipment to diagnose cause of malfunction. Disassembles machinery and equipment to remove parts and make repairs. Repairs, replaces, adjusts, and aligns components of machinery and equipment.

Examines parts for defects, such as breakage or excessive wear. Fabricates replacement parts. Orders or requisitions parts and materials.

Enters codes and instructions to program computer-controlled machinery. Records repairs and maintenance performed. Repairs and replaces electrical wiring and components of machinery. Welds to repair broken metal parts, fabricate new parts, and assemble new equipment. Test-runs repaired machinery and equipment to verify adequacy of repairs. Cleans and lubricates parts, equipment, and machinery.

**49-9042.00 Maintenance and Repair Workers, General Entry – Mid level position assuming education and experience prerequisite**

Inspects and tests machinery and equipment to diagnose machine malfunctions. Dismantles and reassembles defective machines and equipment. Installs new or repaired parts. Installs and/or repairs wiring and electrical and electronic components. Installs machinery and equipment. Assembles, installs, and/or repairs pipe systems and hydraulic and pneumatic equipment. Estimates costs of repairs. Records repairs made and costs. Fabricates and repairs counters, benches, partitions, and other wooden structures, such as sheds and outbuildings. Operates cutting torch or welding equipment to cut or join metal parts. Sets up and operates machine tools to repair or fabricate machine parts, jigs and fixtures, and tools. Lays brick to repair and maintain physical structure of establishment. Paints and repairs woodwork and plaster. Assembles, installs, and/or repairs plumbing. Cleans and lubricates shafts, bearings, gears, and other parts of machinery.

**49-9043.00 Maintenance Workers, Machinery Entry – Mid level position assuming education and experience prerequisite**

Sets up and operates machine and adjusts controls that regulate operational functions to ensure conformance to specifications. Installs, replaces, or changes machine parts and attachments, according to production specifications. Lubricates, oils, or applies adhesive, or other material to machines, machine parts, or other equipment, according to specified procedures. Replaces or repairs metal, wood, leather, glass, or other lining in machine or equipment compartments or containers. Dismantles machine, removes machine parts, and reassembles machine, using hand tools, chain falls, jack, crane, or hoist. Inspects or tests damaged machine parts and marks defective area or advises supervisor of need for repair. Records and maintains production, repair, and machine maintenance information. Marks, separates, ties, aligns, threads, attaches, or inserts material or product preparatory to machine operation or to identify machine process. Measures, mixes, prepares and tests chemical solutions used to clean or repair machinery and equipment, according to product specifications. Communicates with or assists other workers to repair or move machines, machine parts or equipment. Replaces, empties, or replenishes empty machine and equipment containers, such as gas tanks or boxes. Removes hardened material from machine or machine parts, using abrasives, power and hand tools, jackhammer, sledgehammer, or other equipment. Reads work orders and specifications to determine machines and equipment requiring repair or maintenance. Cleans machine and machine parts, using cleaning solvent, cloth, air gun, hose, vacuum, or other equipment. Collects and discards worn machine parts and other garbage to maintain machinery and work areas. Transports machine parts, tools, equipment and other material between work areas and storage, using crane, hoist, or dolly. Inventories and requisitions machine parts, equipment, and other supplies to replenish and maintain stock.

Cuts, shapes, smooths, attaches or assembles pieces of metal, wood, rubber, or other material repair and maintenance machines and equipment. Starts machine and observes mechanical operation to determine efficiency and to detect defects, malfunctions, or other machine damage.

**49-9044.00 Millwrights Entry – Mid – Senior level position assuming education and experience prerequisite**

Dismantles machines, using hammers, wrenches, crowbars, and other hand tools. Assembles machines, and bolts, welds, rivets, or otherwise fastens them to foundation or other structures, using hand tools and power tools. Moves machinery and equipment, using hoists, dollies, rollers, and trucks. Connects power unit to machines or steam piping to equipment, and tests unit to evaluate its mechanical operation. Lays out mounting holes, using measuring instruments, and drills holes with power drill. Positions steel beams to support bedplates of machines and equipment, using blueprints and schematic drawings, to determine work procedures. Replaces defective parts of machine or adjusts clearances and alignment of moving parts. Repairs and lubricates machines and equipment. Operates engine lathe to grind, file, and turn machine parts to dimensional specifications. Signals crane operator to lower basic assembly units to bedplate, and aligns unit to centerline. Constructs foundation for machines, using hand tools and building materials such as wood, cement, and steel. Installs robot and modifies its program, using teach pendant. Shrink-fits bushings, sleeves, rings, liners, gears, and wheels to specified items, using portable gas heating equipment. Levels bedplate and establishes centerline, using straightedge, levels, and transit. Inserts shims, adjusts tension on nuts and bolts, or positions parts, using hand tools and measuring instruments, to set specified clearances between moving and stationary parts. Aligns machines and equipment, using hoists, jacks, hand tools, squares, rules, micrometers, and plumb bobs. Dismantles machinery and equipment for shipment to installation site, usually performing installation and maintenance work as part of team. Attaches moving parts and subassemblies to basic assembly unit, using hand tools and power tools. Assembles and installs equipment, using hand tools and power tools. Bolts parts, such as side and deck plates, jaw plates, and journals, to basic assembly unit.

**49-9045.00 Refractory Materials Repairers, Except Brickmasons Entry – Mid – Senior level position assuming education and experience prerequisite**

Relines or repairs ladle and pouring spout with refractory clay, using trowel. Dumps and tamps clay in mold, using tamping tool. Mixes specified amounts of sand, clay, mortar powder, and water to form refractory clay or mortar, using shovel or mixing machine. Installs preformed metal scaffolding in interior of cupola, using hand tools. Chips slag from lining of ladle, or entire lining when beyond repair, using hammer and chisel. Transfers clay structures to curing ovens, melting tanks, and drawing kilns, using electric forklift truck. Climbs scaffolding with hose, and sprays surfaces of cupola with refractory mixture, using spray equipment. Installs clay structures in melting tanks and drawing kilns to control flow and temperature of molten glass, using hoists and hand tools. Measures furnace wall, and cuts required number of sheets from plastic block, using saw. Bolts sections of wooden mold together, using wrench, and lines mold with paper to prevent adherence of clay to mold. Removes worn or damaged plastic block refractory lining of furnace, using hand tools. Disassembles mold, and cuts, chips, and smooths clay structures, such as floaters, drawbars, and L-blocks, using square rule and hand tools. Dries and bakes new lining by placing inverted lining over burner, building fire in ladle, or by using blowtorch. Fastens stopper head to rod with metal pin, to assemble refractory stopper used to plug pouring nozzles of steel ladles. Spreads mortar on stopper head and rod, using trowel, and slides brick sleeves over rod to form refractory jacket. Tightens locknuts holding assembly together, spreads mortar on jacket to seal sleeve joints, and dries mortar in oven. Drills holes in furnace wall, bolts overlapping layers of plastic to walls, and hammers surface to compress layers into solid sheets.

**49-9051.00 Electrical Power-Line Installers and Repairers Entry – Mid – Senior level position assuming education and experience prerequisite**

Repairs electrical power cables and auxiliary equipment for electrical power lines. Climbs poles and removes and installs hardware, wires, and other equipment. Strings wire conductors and cable between erected poles and adjusts slack, using winch. Drives conveyance equipped with tools and materials to job site. Works on energized lines to avoid interruption of service. Covers conductors with insulating or fireproofing materials. Installs watt-hour meters and connects service drops between power line and consumer. Tests conductors to identify corresponding conductors and to prevent incorrect connections, according to electrical diagrams and specifications. Cleans, tins, and splices corresponding conductors by twisting ends together or by joining ends with metal clamps and soldering connection. Cuts and peels lead sheath and insulation from defective or newly installed cables and conducts prior to splicing. Replaces and straightens poles and attaches cross arms, insulators, and auxiliary equipment to wood poles preparatory to erection. Opens switches or clamps grounding device to de-energize disturbed or fallen lines to facilitate repairs or to remove electrical hazards. Installs and repairs conduits, cables, wires, and auxiliary equipment following blueprints. Splices cables together or to overhead transmission line, customer service line, or street light line. Splices, solders, and insulates conductors and wiring to join

sections of power line, and to connect transformers and electrical accessories. Tests electric power lines and auxiliary equipment, using direct reading and testing instruments to identify cause of disturbances.

**49-9052.00 Telecommunications Line Installers and Repairers Entry – Mid – Senior level position assuming education and experience prerequisite**

Installs terminal boxes and strings lead-in-wires, using electrician's tools. Measures signal strength at utility pole, using electronic test equipment. Connects television set to cable system, evaluates incoming signal, and adjusts system to ensure optimum reception. Collects installation fees. Explains cable service to subscriber. Cleans and maintains tools and test equipment.

Fills and tamps holes, using cement, earth, and tamping device. Digs holes, using power auger or shovel, and hoists poles upright into holes, using truck-mounted winch. Installs and removes plant equipment, such as call boxes and clocks. Repairs cable system, defective lines, and auxiliary equipment. Ascends poles or enters tunnels and sewers to string lines and install terminal boxes, auxiliary equipment and appliances, according to diagrams. Pulls lines through ducts by hand or with use of winch. Computes impedance of wire from pole to house to determine additional resistance needed for reducing signal to desired level.

**49-9062.00 Medical Equipment Repairers Entry – Mid – Senior level position assuming education and experience prerequisite**

Inspects and tests malfunctioning medical and related equipment, using test and analysis instruments and following manufacturers' specifications. Calibrates and adjusts components and equipment, using hand tools, power tools, measuring devices, and following manufacturers' manuals and troubleshooting techniques. Safety-tests medical equipment and facility's structural environment to ensure patient and staff safety from electrical or mechanical hazards. Maintains various equipment and apparatus, such as patient monitors, electrocardiographs, x-ray units, defibrillators, electrosurgical units, anesthesia apparatus, pacemakers, and sterilizers. Cleans and lubricates equipment, using solvents, rags, and lubricants. Consults with medical or research staff to ensure that equipment functions properly and safely. Logs records of maintenance and repair work and approved updates of equipment as required by manufacturer. Demonstrates and explains correct operation of equipment to medical personnel. Installs medical, dental, and related technical equipment in medical and research facilities. Solders loose connections, using soldering iron. Disassembles malfunctioning equipment and removes defective components. Repairs and replaces defective parts, such as motors, clutches, tubes, transformers, resistors, condensers, and switches, using hand tools.

**49-9063.01 Keyboard Instrument Repairers and Tuners Entry – Mid – Senior level position assuming education and experience prerequisite**

Repairs or replaces defective, broken, or worn parts, using hand tools, power tools, glue, and nails. Disassembles and reassembles instruments and parts to tune and repair, using hand tools and power tools. Removes irregularities from tuning pins, strings, and hammers of piano, using wood block or filing tool. Compares pitch of instruments with specified pitch of tuning tool to tune instrument. Cleans instruments, using vacuum cleaner. Mixes and measures glue. Makes wood replacement parts, using woodworking machines and hand tools.

Assembles and installs new pipe organs and pianos in buildings. Inspects and tests parts of pianos, pipe organs, accordions, and concertinas to determine defects, using hand tools, gauges, and electronic testing equipment. Adjusts alignment, string spacing, and striking point of hammers of piano, using wrench, burner, shims, and bushings.

Adjusts lips, reeds, or toe hole of organ pipes, using hand tools, to regulate airflow and loudness of sound. Adjusts felt hammers on piano to increase tonal mellowness or brilliance, using sanding paddle, lacquer, or needles.

**49-9063.02 Stringed Instrument Repairers and Tuners Entry – Mid – Senior level position assuming education and experience prerequisite**

Repairs broken parts, using glue, clamp, and hand press. Strings instrument and adjusts truss and bridge of instrument to obtain specified string tension and height. Refinishes instruments to protect and decorate them, using hand tools, buffing tools, and varnish. Adjusts string tension to tune instrument, using hand tools and electronic tuning device. Disassembles instrument or bow, using hand tools. Removes cracked, worn, or broken parts of instrument, using heated knife and hand tools. Assembles instruments according to specifications, using hand tools. Tests tubes and pickups in electronic amplifier units, and solders parts and connections. Plays instrument to determine pitch. Carves wood replacement parts, such as wedges or plugs, according to the shape and dimensions of the instrument or bow. Inspects musical instruments, such as cellos, violins, guitars, and mandolins, to determine defects. Reassembles instrument or bow with new or repaired part, using glue, hairs, yarn, resin, and clamps.

**49-9063.03 Reed or Wind Instrument Repairers and Tuners Entry – Mid – Senior level position assuming education and experience prerequisite**



Disassembles instrument parts, such as keys, pistons, and other parts, to tune or repair, using gas torch and hand tools. Files reed until pitch corresponds with standard pitch of tuning bar. Lubricates and reassembles instrument, using hand tools and soldering iron or torch. Removes dents and burrs from metal instruments, using mallet and burnishing tool. Operates bellows to sound metal reed and ascertain its pitch. Shapes old parts and replacement parts to improve tone or intonation, using hand tools, lathe, or soldering iron. Washes metal instruments in lacquer-stripping and cyanide solution to remove lacquer and tarnish. Polishes instrument, using rag and polishing compound, buffing wheel, or burnishing tool. Compares pitch of reed with pitch of tuning bar. Inspects mechanical parts of instrument to determine defects. Replaces worn pads and springs, using hand tools. Repairs cracks in wood or metal instruments, using wire, lathe, filler, clamps, or soldering iron.

**49-9063.04 Percussion Instrument Repairers and Tuners Entry – Mid – Senior level position assuming education and experience prerequisite**

Stretches skin over rim hoop, using hand-tucking tool. Removes dents in tympani, using steel block and hammer. Compares tone of bar with tuned block, stroboscope, or electronic tuner. Cleans, sands, and paints parts of percussion instruments to maintain their condition, in accordance to blueprints and shop drawings. Solders or welds frames of mallet instruments and metal drum parts. Assembles bar onto instruments. Removes material from bar, using band saw, sanding machine, machine grinder, or hand files and scrapers, to obtain the specified tone. Soaks drumhead in water to make it pliable. Cuts new drumhead from animal skin, using scissors. Removes drumhead, using drum key and cutting tools. Places rim hoop back onto drum shell to allow drumhead to dry and become taut. Strikes wood, fiberglass, or metal bars of instruments, such as xylophone or vibraharp, to ascertain tone. Repairs breaks in percussion instruments, such as drums and cymbals, using drill press, power saw, glues, clamps, or other hand tools.

**49-9092.00 Commercial Divers Entry – Mid – Senior level position assuming education and experience prerequisite**

Descends into water with aid of diver helper, using scuba gear or diving suit. Cuts and welds steel using underwater welding equipment. Repairs ships and other structures below the waterline, using caulk, bolts, and hand tools. Levels rails, using wedges and maul or sledgehammer. Photographs underwater structures or marine life. Drills holes in rock and rigs explosives for underwater demolitions. Sets or guides placement of pilings and sandbags to provide support for structures, such as docks, bridges, cofferdams, and platforms. Removes obstructions from strainers and marine railway or launching ways, using pneumatic and power hand tools. Communicates with surface while underwater by signal line or telephone. Searches for lost or sunken objects, such as bodies, torpedoes, equipment, and ships. Recovers objects by placing rigging around sunken objects and hooking rigging to crane lines. Inspects docks, hulls and propellers of ships, and underwater pipelines, cables, and sewers.

**49-9093.00 Fabric Menders, Except Garment Entry – Mid – Senior level position assuming education and experience prerequisite**

Operates sewing machine to re-stitch defective seams, sew up holes, or replace garment pockets or blanket binding ribbons. Replaces defective shrouds and splices connections between shrouds and harness, using hand tools. Spreads out articles or material and examines for holes, tears, worn areas, and other marked or unmarked defects. Cleans stains from fabric or garment, using spray gun and cleaning fluid. Stamps grommets into canvas, using mallet and punch or eyelet machine. Sews labels and emblems on articles for identification. Measures and hems curtains, garments, and canvas coverings to size, using tape measure. Sews fringe, tassels, and ruffles onto drapes and curtains, and buttons and trimming onto garments. Trims edges of cut or torn fabric, using scissors or knife, and stitches together Patches holes, sews tears and ripped seams, or darns defects in items, using needle and thread or sewing machine. Re-knits runs and replaces broken threads, using latch needle. Repairs holes by weaving thread over them, using needle. Pulls knots to wrong side of garment, using hook.

**49-9094.00 Locksmiths and Safe Repairers Entry – Mid – Senior level position assuming education and experience prerequisite**

Disassembles mechanical or electrical locking devices and repairs or replaces worn tumblers, springs, and other parts, using hand tools. Moves picklock in cylinder to open door locks without keys. Opens safe locks by drilling. Keeps record of company locks and keys. Removes interior and exterior finishes on safes and vaults and sprays on new finishes. Inserts new or repaired tumblers into lock to change combination. Repairs and adjusts safes, vault doors, and vault components, using hand tools, lathes, drill presses, and welding and acetylene cutting apparatus. Cuts new or duplicate keys, using key cutting machine. Installs safes, vault doors, and deposit boxes according to blueprints, using equipment such as powered drills, taps, dies, truck crane, and dolly.



## **JOB TITLES AND ASSOCIATED TASKS** **Sorted by Cognofile**

### **49-9095.00 Manufactured Building and Mobile Home Installers Entry – Mid – Senior level position assuming education and experience prerequisite**

Locates and repairs frayed wiring, broken connections, or incorrect wiring, using ohmmeter, soldering iron, tape, and hand tools. Repairs plumbing and propane gas lines, using caulking compounds and plastic or copper pipe. Removes damaged exterior panels, repairs and replaces structural frame members, and seals leaks, using hand tools.

Connects electrical system to outside power source and activates switches to test operation of appliances and light fixtures. Confers with customer or reads work order to determine nature and extent of damage to unit. Connects water hose to inlet pipe of plumbing system and tests operation of toilets and sinks. Seals open side of modular units to prepare them for shipment, using polyethylene sheets, nails, and hammer. Resets hardware, using chisel, mallet, and screwdriver. Refinishes wood surfaces on cabinets, doors, moldings, and floors, using power sander, putty, spray equipment, brush, paints, or varnishes. Opens and closes doors, windows, and drawers to test their operation and trims edges to fit, using jack- plane or drawknife. Lists parts needed, estimates costs, and plans work procedure, using parts list, technical manuals, and diagrams. Repairs leaks with caulking compound or replaces pipes, using pipe wrench. Inspects, examines, and tests operation of parts or systems to be repaired and to verify completeness of work performed.

### **49-9096.00 Riggers Entry – Mid – Senior level position assuming education and experience prerequisite**

Selects gear, such as cables, pulleys, and winches, according to load weight and size, facilities, and work schedule. Test rigging, to ensure safety and reliability. Signals or gives verbal directions to workers engaged in hoisting and moving loads, to ensure safety of workers and materials. Cleans and dresses machine surfaces and component parts. Controls movement of heavy equipment through narrow openings or confined spaces. Aligns, levels, and anchors machinery. Manipulates rigging lines, hoists, and pulling gear, to move or support materials, such as heavy equipment, ships, or theatrical sets. Dismantles, maintains, and stores rigging equipment. Fabricates and repairs rigging, such as slings, tackle, and ladders, using hand and power tools. Assembles and installs supporting structures, rigging, hoists, and pulling gear, using hand and power tools. Attaches pulleys and blocks to fixed overhead structures, such as beams, ceilings, and gin pole booms with bolts and clamps. Attaches load to rigging, to provide support or prepare for moving, using hand and power tools.

### **49-9097.00 Signal and Track Switch Repairers Entry – Mid – Senior level position assuming education and experience prerequisite**

Installs and inspects switch-controlling mechanism on trolley wire and switch in bed of track bed, using hand tools and test equipment. Inspects batteries to ensure that batteries are filled with battery water or to determine need for replacement. Tests air lines and air cylinders on pneumatically operated gates. Compiles reports indicating mileage or track inspected, repairs made, and equipment requiring replacement. Cleans lenses of lamps with cloths and solvent. Maintains high-tension lines, de-energizing lines for power company as repairs are requested. Lubricates moving parts on gate crossing mechanisms and swinging signals. Inspects and tests gate crossings, signals, and signal equipment, such as interlocks and hotbox detectors. Tests signal circuit connections, using standard electrical testing equipment. Replaces defective wiring, broken lenses, or burned-out light bulbs. Tightens loose bolts, using wrench, and tests circuits and connections by opening and closing gate. Inspects electrical units of railroad grade crossing gates to detect loose bolts, defective electrical connections and parts.

### **49-9098.00 Helpers--Installation, Maintenance, and Repair Workers Entry level position assuming education and experience prerequisite**

Helps mechanics and repairers maintain and repair vehicles, industrial machinery, and electrical and electronic equipment. Transfers equipment, tools, parts, and other objects to and from workstations and other areas, using hand tools, power tools, and moving equipment. Installs or replaces machinery, equipment, and new or replacement parts and instruments, using hand tools or power tools. Applies protective materials to equipment, components, and parts to prevent defects and corrosion. Positions vehicles, machinery, equipment, physical structures, and other objects, for assembly or installation, using hand tools, power tools, and moving equipment. Builds or erects and maintains physical structures, using hand tools or power tools. Examines and tests machinery, equipment, components, and parts for defects and to ensure proper functioning. Tends and observes equipment and machinery to verify efficient and safe operation. Adjusts and connects or disconnects wiring, piping, tubing, and other parts, using hand tools or power tools. Assembles and disassembles machinery, equipment, components, and other parts, using hand tools and power tools. Furnishes tools, parts, equipment, and supplies to other workers. Cleans or lubricates vehicles, machinery, equipment, instruments, tools, work areas, and other objects, using hand tools, power tools, and cleaning equipment.

### **51-2011.01 Aircraft Structure Assemblers, Precision Entry – Mid level position assuming education and experience prerequisite**



## JOB TITLES AND ASSOCIATED TASKS Sorted by Cognofile

Installs units, parts, equipment, and components in structural assembly, according to blueprints and specifications, using hand tools and power tools. Locates and marks reference points and holes for installation of parts and components, using jigs, templates, and measuring instruments. Aligns structural assemblies. Positions and aligns subassemblies in jigs or fixtures, using measuring instruments, following blueprint lines and index points. Inspects and tests installed units, parts, and equipment for fit, performance, and compliance with standards, using measuring instruments and test equipment. Cuts, trims, and files parts, and verifies fitting tolerances to prepare for installation. Bolts, screws, or rivets accessories to fasten, support, or hang components and subassemblies. Drills holes in structure and subassemblies, and attaches brackets, hinges, or clips to secure installation or to fasten subassemblies.

### **51-2011.02 Aircraft Systems Assemblers, Precision Entry – Mid – Senior level position assuming education and experience prerequisite**

Aligns, fits, and assembles system components, such as armament, structural, and mechanical components, using jigs, fixtures, measuring instruments, hand tools, and power tools. Tests systems and assemblies for functional performance, and adjusts, repairs, or replaces malfunctioning units or parts. Installs mechanical linkages and actuators, and verifies tension of cables, using tensiometer. Reworks, replaces, realigns, and adjusts parts and assemblies according to specifications. Reads and interprets blueprints, illustrations, and specifications to determine layout, sequence of operations, or identity and relationship of parts. Measures, drills, files, cuts, bends, and smooths materials to ensure fit and clearance of parts. Cleans, oils, assembles, and attaches system components to aircraft, using hand tools, power tools, and measuring instruments. Examines parts for defects and for conformance to specifications, using precision measuring instruments. Lays out location of parts and assemblies, according to specifications. Assembles and installs parts, fittings, and assemblies on aircraft, using layout tools, hand tools, power tools, and fasteners.

### **51-2011.03 Aircraft Rigging Assemblers Entry – Mid – Senior level position assuming education and experience prerequisite**

Sets up and operates machines and systems to crimp, cut, bend, form, swage, flare, bead, burr, and straighten tubing, according to specifications. Swages fittings onto cable, using swaging machine. Marks location of cutouts, holes, and trim lines of parts and relationship of parts, using measuring instruments.

Reads and interprets, blueprints, work orders, data charts, and specifications to determine operations, and type, quantity, dimensions, configuration, and finish of tubing, cable and fittings. Selects and installs accessories in swaging machine, using hand tools. Tests tubing and cable assemblies for defects, using pressure testing equipment and proof loading machines. Marks identifying information on tubing or cable assemblies, using electro-chemical etching device, label, rubber stamp, or other methods. Cleans, lubricates, and coats tubing and cable assemblies. Verifies dimensions of cable assembly and position of fittings, using measuring instruments, and repairs and reworks defective assemblies. Fabricates cable templates. Forms loops or splices in cables, using clamps and fittings, or reweaves cable strands.

Welds tubing and fittings, and solders cable ends, using tack-welder, induction brazing chamber, or other equipment. Assembles and attaches fittings onto cable and tubing components, using hand tools. Measures, cuts, and inspects cable and tubing, using master template, measuring instruments, and cable cutter or saw.

### **51-2021.00 Coil Winders, Tapers, and Finishers Entry – Mid – Senior level position assuming education and experience prerequisite**

Operates or tends wire-coiling machine. Repairs and maintains electrical components and machinery parts, using hand tools. Observes gauges and stops machine to remove completed components, using hand tools. Selects and loads materials, such as work pieces, objects, and machine parts onto equipment used in coiling process. Examines and tests wired electrical components, using measuring devices. Records production and operational data on specified forms. Applies solutions or paints to wired electrical components, using hand tools. Reviews work orders and specifications to ascertain material needed and type of part to be processed. Attaches, alters and trims materials, such as wire, insulation, and coils, using hand tools.

### **51-2022.00 Electrical and Electronic Equipment Assemblers Entry – Mid – Senior level position assuming education and experience prerequisite**

Assembles systems and support structures, and installs components, units, and printed circuit boards, following specifications and using hand tools and power tools. Marks and tags components to track and identify stock inventory. Paints structures as specified, using paint sprayer. Instructs customers in installation, repair, and maintenance of products and explains assembly procedures or techniques to workers. Packs finished assemblies for shipment and transports to storage areas, using hoists or hand trucks. Cleans parts, using cleaning solution, air hose, and cloth. Completes, reviews, and maintains production, time, and component waste reports. Assists or confers with supervisor or engineer to plan and

review work activities and to resolve production problems. Selects or distributes materials, supplies, and subassemblies to work area. Inspects units to detect malfunctions, and adjusts, repairs, or replaces component parts to ensure conformance to specifications. Measures and adjusts voltages to specified value to determine operational accuracy of instruments. Fabricates and forms parts, coils, and structures according to specifications, using drill, calipers, cutters, and saws. Positions, aligns, and adjusts work pieces and electrical parts to facilitate wiring and assembly. Tests wiring installations, assemblies, and circuits for resistance factors and operational defects, and records results. Drills and taps holes in specified locations to mount control units and to provide openings for elements, wiring, and instruments. Reads and interprets schematic drawings, diagrams, blueprints, specifications, work orders, and reports to determine materials requirements and assembly instructions.

**51-2023.00 Electromechanical Equipment Assemblers Entry – Mid – Senior level position assuming education and experience prerequisite**

Assembles parts or unit and attaches unit to assembly, subassembly, or frame, using hand tools and power tools. Attaches name plates and marks identifying information on parts. Cleans and lubricates parts and subassemblies. Disassembles unit to replace parts or to crate for shipping. Measures parts to determine tolerances, using precision measuring instruments, such as micrometers, calipers, and verniers. Drills, taps, reams, countersinks, and spot faces bolt holes in parts, using drill press and portable power drill. Positions and aligns parts, using fixtures, jigs, and templates. Files, laps, and buffs parts to fit, using hand tools and power tools. Reads blueprints and specifications to determine component parts and assembly sequence of electromechanical unit. Connects electrical wiring according to circuit diagram, using soldering iron. Inspects, tests, and adjusts completed unit to ensure that unit meets specifications, tolerances, and customer order requirements.

**51-2031.00 Engine and Other Machine Assemblers Entry – Mid – Senior level position assuming education and experience prerequisite**

Fastens components or parts together, using hand tools, rivet gun, and welding equipment. Maintains and lubricates parts and components. Sets up and operates metalworking machines, such as milling and grinding machines, to shape or fabricate parts. Removes rough spots and smoothes surfaces to fit, trim, or clean parts or components, using hand tools and power tools. Operates machine to verify functioning, machine capabilities, and conformance to customer's specifications. Lays out and drills, reams, taps, and cuts parts for assembly. Analyzes assembly blueprint and specifications manual, and plans assembly or building operations. Fastens and installs piping, fixtures, or wiring and electrical components to specifications. Inspects and tests parts and accessories for leakage, defect, or functionality, using test equipment. Verifies conformance of parts to stock list and blueprints, using measuring instruments, such as calipers, gauges, and micrometers. Sets and verifies clearance of parts. Reworks, repairs, and replaces damaged parts or assemblies.

Positions and aligns components for assembly, manually or with hoist.

**51-2041.01 Metal Fabricators, Structural Metal Products Entry – Mid – Senior level position assuming education and experience prerequisite**

Develops layout and plans sequence of operations for fabricating and assembling structural metal products, applying trigonometry and knowledge of metal. Locates and marks bending and cutting lines onto work piece, allowing for stock thickness and machine and welding shrinkage. Sets up and operates fabricating machines, such as brakes, rolls, shears, flame cutters, and drill presses. Verifies conformance of work piece to specifications, using square, ruler, and measuring tape. Designs and constructs templates and fixtures, using hand tools. Sets up and operates machine tools associated with fabricating shops, such as radial drill, end mill, and edge planer. Preheats work pieces to render them malleable, using hand torch or furnace. Positions, aligns, fits, and welds together parts, using jigs, welding torch, and hand tools. Hammers, chips, and grinds work piece to cut, bend, and straighten metal.

**51-2041.02 Fitters, Structural Metal- Precision Entry – Mid – Senior level position assuming education and experience prerequisite**

Aligns parts, using jack, turnbuckles, wedges, drift pins, pry bars, and hammer. Sets up face block, jigs and fixtures. Locates reference points, using transit, and erects ladders and scaffolding to fit together large assemblies. Heat-treats parts with acetylene torch. Straightens warped or bent parts, using sledge, hand torch, straightening press, or bulldozer. Gives directions to welder to build up low spots or short pieces with weld. Removes high spots and cuts bevels, using hand files, portable grinders, and cutting torch. Examines blueprints and plans sequence of operation, applying knowledge of geometry, effects of heat, weld shrinkage, machining, and metal thickness. Marks reference points onto floor or face block and transposes them to work piece, using measuring devices, squares, chalk, and soapstone. Positions or tightens braces, jacks, clamps, ropes, or bolt straps, or bolts parts in positions for welding or riveting. Tack welds fitted parts together. Moves parts into position, manually or by hoist or crane.



## JOB TITLES AND ASSOCIATED TASKS Sorted by Cognofile

### **51-2091.00 Fiberglass Laminators and Fabricators Entry – Mid – Senior level position assuming education and experience prerequisite**

Laminate layers of fiberglass on molds to form boat decks and hulls, bodies for golf carts, automobiles, or other products.

### **51-2092.00 Team Assemblers Entry – Mid – Senior level position assuming education and experience prerequisite**

Work as part of a team having responsibility for assembling an entire product or component of a product. Team assemblers can perform all tasks conducted by the team in the assembly process and rotate through all or most of them rather than being assigned to a specific task on a permanent basis. May participate in making management decisions affecting the work. Team leaders who work as part of the team should be included.

### **51-2093.00 Timing Device Assemblers, Adjusters, and Calibrators Entry – Mid – Senior level position assuming education and experience prerequisite**

Adjusts size or positioning of timepiece parts to achieve specified fit or function using calipers, fixture, and loupe. Cleans and lubricates timepiece parts and assemblies using solvent, buff stick, and oil. Bends parts such as hairsprings, pallets, barrel covers, and bridges to correct deficiencies in truing or endshake using tweezers. Observes operation of timepiece parts and subassemblies to determine accuracy of movement and diagnose cause of defects. Replaces specified parts to repair malfunctioning timepieces using watchmaker's tools, loupe, and holding fixture. Tests operation and fit of timepiece parts and subassemblies using electronic testing equipment, tweezers, watchmaker's tools, and loupe. Screws parts or assemblies into position. Examines components of timepieces such as watches, clocks, or chronometers for defects using loupe or microscope. Reviews blueprints, sketches, or work orders to gather information about task to be completed. Disassembles timepieces such as watches, clocks, and chronometers to diagnose and repair malfunctions. Assembles and installs components of timepieces using watchmaker's tools and loupe to complete mechanism.

### **51-3011.01 Bakers, Bread and Pastry Entry – Mid – Senior level position assuming education and experience prerequisite**

Weighs and measures ingredients, using measuring cups and spoons. Mixes and cooks pie fillings, and pours fillings into pie shells and tops filling with meringue or cream. Spreads or sprinkles toppings on loaves or specialties and places dough in oven, using long-handled paddle (peel). Mixes ingredients to make icings, decorates cakes and pastries, and blends colors for icings, shaped ornaments, and statuaries. Cuts, peels, and prepares fruit for pie fillings. Covers filling with top crust; places pies in oven; and adjust drafts or thermostatic controls to regulate oven temperatures. Checks production schedule to determine variety and quantity of goods to bake. Molds dough in desired shapes, places dough in greased or floured pans, and trims overlapping edges with knife. Mixes ingredients to form dough or batter by hand or using electric mixer. Rolls and shapes dough, using rolling pin and cuts dough in uniform portions with knife, divider, cookie cutter.

### **51-3011.02 Bakers, Manufacturing Entry – Mid – Senior level position assuming education and experience prerequisite**

Measures flour and other ingredients to prepare batters, dough, fillings, and icings, using scale and graduated containers. Observes color of products being baked and adjusts oven temperature. Applies glaze, icing, or other topping to baked goods, using spatula or brush. Develops new recipes for cakes and icings. Rolls, cuts, and shapes dough to form sweet rolls, pie crusts, tarts, cookies, and related products prior to baking. Dumps ingredients into mixing-machine bowl or steam kettle to mix or cook ingredients according to specific instructions. Places dough in pans, molds, or on sheets, and bakes dough in oven or on grill. Decorates cakes.

### **51-3021.00 Butchers and Meat Cutters Entry – Mid – Senior level position assuming education and experience prerequisite**

Cuts, trims, bones, ties, and grinds meats, such as beef, pork, poultry, and fish, to prepare meat in cooking form. Records quantity of meat received and issued to cooks. Estimates requirements and requisitions or orders meat supply. Shapes, laces, and ties roasts, using boning knife, skewer, and twine. Wraps and weighs meat for customers and collects money for sales. Receives, inspects, and stores meat upon delivery. Places meat on trays in display counter.

### **51-3022.00 Meat, Poultry, and Fish Cutters and Trimmers Entry – Mid – Senior level position assuming education and experience prerequisite**

Trims, slices and sections carcasses for future processing. Cleans carcasses and removes waste products or defective portions. Slaughters live animals. Obtains and distributes specified meat or carcass. Seals containers of meat. Weighs meats and tags containers for weight and contents.

Separates meats and byproducts into specified containers. Inspects meat products for defects or blemishes. Cuts and trims meat to prepare for packing.  
Removes parts such as skin, feathers, scales or bones from carcass.

**51-3023.00 Slaughterers and Meat Packers Entry – Mid – Senior level position assuming education and experience prerequisite**

Trims head meat and otherwise severs or removes parts of animals heads or skulls. Trims, cleans, and/or cures animal hides. Grinds meat into sausage. Slaughters animals in accordance with religious law and determines that carcasses meet specified religious standards when slaughtering is performed for religious purposes. Slits open, eviscerates, and trims carcasses of slaughtered animals. Cuts, trims, skins, sorts, and washes viscera of slaughtered animals to separate edible portions from offal. Washes and/or shaves carcasses. Shackles hind legs of animals to raise them for slaughtering or skinning. Severs jugular vein to drain blood and facilitate slaughtering. Saws, splits, or scribes slaughtered animals to reduce carcasses. Skins sections of animals or whole animals. Removes bone and cuts meat into standard cuts to prepare meat for marketing. Wraps dressed carcasses and/or meat cuts. Stuns animals prior to slaughtering.

**51-3091.00 Food and Tobacco Roasting, Baking, and Drying Machine Operators and Tenders Entry – Mid – Senior level position assuming education and experience prerequisite**

Observes temperature, humidity, and pressure gauges, or product, and adjusts controls and turns valves to maintain prescribed operating conditions. Cleans equipment, with steam, hot water, and hose. Takes sample of product during or after process for laboratory analysis.

Installs equipment, such as spray unit, cutting blades, or screens, using hand tools. Pushes racks or carts to transfer product to storage or for further processing. Clears or dislodges blockages in bins, screens, or other equipment, using pole, brush, or mallet. Observes and listens for machine malfunctions, and notifies supervisor when corrective actions fail. Records production data, such as weight and amount of product processed, type of product, and time and temperature of processing. Reads work order to determine quantity and type of product to be baked, dried, or roasted. Fills or removes product from trays, carts, hoppers, or equipment, using scoop, peel, or shovel, or by hand.

Weighs product, using scale hopper or scale conveyor. Observes, feels, or tastes products after processing to ensure products conform to standards. Smooths out product in bin, tray, or conveyor, using rake or shovel. Tests product for moisture content, using moisture meter. Opens valve, discharge gates, or hopper chutes, to load or remove product from oven or equipment. Sets temperature and time controls, lights ovens or gas burners, and starts equipment, such as conveyors, blowers, driers, or pumps.

**51-3092.00 Food Batch Makers Entry – Mid – Senior level position assuming education and experience prerequisite**

Calculates ingredient amounts to formulate or modify recipes to produce food product of specific flavor, texture, clarity, bouquet, and color. Homogenizes or pasteurizes material to prevent separation of substances or to obtain prescribed butterfat content. Separates, spreads, kneads, spins, casts, cuts, or rolls food product by hand or using machine. Gives directions to other workers who are assisting in batch making process. Records amounts of ingredients used, test results, and time cycles. Grades food product according to government regulations or according to type, color, bouquet, and moisture content. Cools food product batch on slabs or in water-cooled kettle. Tests food product sample for moisture content, acidity level, or butterfat content. Examines, feels, and tastes product to evaluate color, texture, flavor, and bouquet. Mixes or blends ingredients, according to recipe, using paddle or agitator. Stirs and cooks ingredients at specified temperatures. Operates refining machine to reduce size of cooked batch. Measures and weighs ingredients, using English or metric measures and balance scales. Determines mixing sequence, based on knowledge of temperature effects and solubility and miscibility properties of specific ingredients. Fills processing or cooking container, such as water-cooled kettle, steam-jacketed rotating cooker, pressure cooker, or vat, with ingredients, following recipe.

**51-3093.00 Food Cooking Machine Operators and Tenders Entry – Mid – Senior level position assuming education and experience prerequisite**

Starts conveyers, machines or pumps and sets temperature, pressures and time controls. Records production and test data, such as processing steps, temperature and steam readings, cooking time, batches processed, and test results. Cleans and washes equipment, using water hoses, cleaning or sterilizing solutions or rinses. Removes cooked material or products from equipment. Notifies or signals other workers to operate equipment or when processing complete. Examines sample of product, tests color, content, consistency, viscosity, acidity, or specific gravity, and removes impurities from product. Pours, adds or loads prescribed quantities of ingredients or products into cooking equipment, manually or using hoist. Measures or weighs prescribed ingredients, using scales or measuring containers. Listens for malfunction alarms, shuts down equipment, and notifies supervisor. Places products on conveyor or cart and monitors flow. Observes gauges, dials and product texture or color and adjusts controls to maintain appropriate temperature,

pressure and flow of ingredients. Admits required amounts of water, steam, cooking oils or compressed air into equipment. Turns valves or starts pumps to drain product from equipment and transfer to storage, cooling or further processing areas. Reads recipes or formulae to determine ingredients or quantities of ingredients needed. Operates auxiliary machines and equipment such as grinders, canners and molding presses, to prepare or further process products. Operates and controls equipment such as, kettles, cookers, vats and tanks, to cook ingredients or prepare products for further processing. Activates agitators and paddles to mix or stir ingredients and stops machine when ingredients are thoroughly mixed.

**51-4011.01 Numerical Control Machine Tool Operators and Tenders, Metal and Plastic Entry – Mid – Senior level position assuming education and experience prerequisite**

Selects, measures, assembles, and sets machine tools, such as drill bits and milling or cutting tools using precision measuring instruments. Mounts, installs, aligns, and secures tools, attachments, fixtures, and work piece on machine using hand tools and precision measuring instruments. Determines specifications or procedures for tooling set-up, machine operation, work piece dimensions, or numerical control sequences using blueprints, instructions, and machine knowledge. Calculates and sets machine controls to position tools, synchronize tape and tool, or regulate cutting depth, speed, feed, or coolant flow. Monitors machine operation and control panel displays to detect malfunctions and compare readings to specifications. Enters commands or manually adjusts machine controls to correct malfunctions or tolerances. Measures dimensions of finished work piece to ensure conformance to specifications using precision measuring instruments, templates, and fixtures. Examines electronic components for defects and completeness of laser beam trimming using microscope. Operates lathe, drill press, jig-boring machine, or other machines manually or semi-automatically. Cleans machine, tooling, and parts using solvent or solution and rag. Confers with supervisor or programmer to resolve machine malfunctions and production errors and obtains approval to continue production. Maintains machines and removes and replaces broken or worn machine tools using hand tools. Lifts work piece to machine manually, with hoist or crane, or with tweezers. Stops machine to remove finished work piece or change tooling, setup, or work piece placement according to required machining sequence. Lays out and marks areas of part to be shot-peened, and fills hopper with shot. Positions and secures work piece on machine bed, indexing table, fixture, or dispensing or holding device. Loads control media, such as tape, card, or disk, in machine controller or enters commands to retrieve programmed instructions. Starts automatic operation of numerical control machine-to-machine parts or test setup, work piece dimensions, or programming.

**51-4012.00 Numerical Tool and Process Control Programmers Entry – Mid – Senior level position assuming education and experience prerequisite**

Prepares geometric layout from graphic displays, using computer-assisted drafting software or drafting instruments and graph paper. Sorts shop orders into groups to maximize materials utilization and minimize machine setup. Reviews shop orders to determine job specifications and requirements. Loads and unloads disks or tapes and observes operation of machine on trial run to test taped or programmed instructions. Depresses pedal or button of programmer to enter coordinates of each hole location into program memory. Moves reference table to align pattern film over circuit board holes with reference marks on enlarger scope. Aligns and secures pattern film on reference table of optical programmer and observes enlarger scope view of printed circuit board. Determines reference points, machine cutting paths, or hole locations and computes angular and linear dimensions, radii, and curvatures. Compares encoded tape or computer printout with original program sheet to verify accuracy of instructions. Draws machine tool paths on pattern film, using colored markers and following guidelines for tool speed and efficiency. Enters computer commands to store or retrieve parts patterns, graphic displays, or programs to transfer data to other media. Revises numerical control machine tape programs to eliminate instruction errors and omissions. Analyzes drawings, specifications, printed circuit board pattern film, and design data to calculate dimensions, tool selection, machine speeds, and feed rates. Writes instruction sheets, cutter lists, and machine instructions programs to guide setup and encode numerical control tape.

**51-4021.00 Extruding and Drawing Machine Setters, Operators, and Tenders, Metal and Plastic Entry – Mid – Senior level position assuming education and experience prerequisite**

Installs dies, machine screws, and sizing rings on machine extruding thermoplastic or metal materials. Starts machine and sets controls to regulate vacuum, air pressure, sizing rings, and temperature, and synchronizes speed of extrusion. Loads machine hopper with mixed materials, using auger, or stuffs rolls of plastic dough into machine cylinders. Operates shearing mechanism to cut rods to specified length. Replaces worn dies when products vary from specifications. Measures extruded articles for conformance to specifications and adjusts controls to obtain product of specified dimensions. Reels extruded product into rolls of specified length and weight. Tests physical properties of product with testing devices, such as acid-bath tester, burst tester, and impact tester. Examines extruded product for defects, such as wrinkles, bubbles, and splits. Studies specifications, determines setup procedures and selects machine dies and parts.

Adjusts controls to draw or press metal into specified shape and diameter. Selects nozzles, spacers, and wire guides, according to diameter and length of rod. Weighs and mixes pelletized, granular, or powdered thermoplastic materials and coloring pigments.

**51-4022.00 Forging Machine Setters, Operators, and Tenders, Metal and Plastic Entry – Mid – Senior level position assuming education and experience prerequisite**

Starts machine, produces sample work piece, and observes operations to detect machine malfunction and ensure setup conforms to specifications. Reads blueprints to determine specified tolerances and sequence of operations to set up machines. Positions and moves metal wire or work piece through series of dies to compress and shape stock to form die impressions. Marks layout, verifies dimensions, and measures, weighs and inspects machined parts to ensure conformance to product specifications. Confers with other workers regarding setup and operational specifications of machines. Sharpens cutting tools and drill bits, using bench grinder. Adjust temperature controls of furnace in which rods are heated. Trims and compresses finished forgings to specified tolerances. Installs and adjusts or removes and replaces dies, synchronizing cams, forging hammer, and stop guides, according to specifications. Selects, aligns, and bolts positioning fixtures and stops and specified dies to ram and anvil, forging rolls, or presses and hammers. Turns handles or knobs to set pressure and depth of ram stroke, and synchronize machine operations.

**51-4023.00 Rolling Machine Setters, Operators, and Tenders, Metal and Plastic Entry – Mid – Senior level position assuming education and experience prerequisite**

Starts operation of rolling and milling machines to flatten, temper, form, and reduce sheet metal sections and produce steel strips. Installs equipment, such as guides, guards, gears, cooling equipment and rolls, using hand tools. Examines, inspects, measures, and feels raw materials and finished product to verify conformance to specifications, visually or using measurement instruments. Fills oil cups, adjusts valves, and observes gauges to control flow of metal coolant and lubricants onto work piece. Signals and assists other workers to remove and position equipment, fill hoppers, and feed materials into machine. Directs and trains other workers to change rolls, operate mill equipment, remove coils and cobbles, and band and load material. Records mill production on schedule sheet. Removes scratches and polishes roll surface, using polishing stone and electric buffer.

Disassembles sizing mills removed from rolling line, and sorts and stores parts. Activates shear and grinder to trim work piece, cut steel strips, and monitor forming of gears to specified length and diameter. Threads or feeds sheets or rods through rolling mechanism, or starts and controls mechanism that automatically feeds steel into rollers. Calculates draft space and roll speed for each mill stand to plan rolling sequence and specified dimensions and temper. Reads rolling order and mill schedules to determine setup specifications, work sequence, product dimensions, and installation procedures. Positions, aligns, and secures arbor, spindle, coils, mandrel, dies, and slitting knives onto machine. Resets, adjusts, and corrects machine set-up to reduce thickness, reshape products, and eliminate product defects. Monitors machine cycles and mill operation to detect jamming and to ensure fabricated products conform to specifications. Sets distance points between rolls, guides, meters, and stops, according to specifications. Selects rolls, dies, roll stands, and chucks from data charts to form specified contours and to fabricate products. Manipulates controls and observes dial indicators to monitor, adjust, and regulate speed of machine mechanisms.

**51-4031.01 Sawing Machine Tool Setters and Set-Up Operators, Metal and Plastic Entry – Mid – Senior level position assuming education and experience prerequisite**

Turns controls to set cutting speed, feed rate, and table angle for specified operation. Scribes reference lines on work piece as guide for sawing operations, according to blueprints, templates, sample parts, or specifications. Replaces defective blades or wheels, using hand tools. Places work piece on cutting table, manually or using hoist, and clamps work piece into position. Measures completed work piece to verify conformance to specifications, using micrometers, gauges, calipers, templates, or rulers. Marks identifying data on work pieces. Examines completed work pieces for defects, such as chipped edges and marred surfaces, and sorts defective pieces according to defect. Removes housings, feed tubes, tool holders, and other accessories to replace worn or broken parts, such as springs and bushings. Sharpens dulled blades, using bench grinder, abrasive wheel, or lathe. Reads work order for specifications, such as materials to be used, location of cutting lines, and dimensions and tolerances. Positions guides, stops, holding blocks, or other fixtures to secure and direct work piece, using hand tools and measuring devices. Sets blade tension, height, and angle to perform prescribed cut, using wrench. Turns valves to start flow of coolant against cutting area and to start airflow, which blows cuttings away from kerf. Selects blade according to specifications and installs on machine, using hand tools. Starts machine and feeds work piece against blade, guiding along layout lines, to cut work piece to specified dimensions.

**51-4031.02 Punching Machine Setters and Set-Up Operators, Metal and Plastic Entry – Mid – Senior level position assuming education and experience prerequisite**



Activates machine and observes operation to detect misalignment or machine malfunctions. Installs, aligns and locks specified punches, dies and cutting blades in ram or bed of machine, using gauges and hand tools. Sets stops or guides or installs jigs or fixtures for positioning successive work pieces. Measures work piece with rule or tape, or traces from template and marks location with scribe, soapstone, or center punch. Inspects work pieces for conformance to specifications, visually or using gauges or templates, scale, compass and adjusts machine to correct errors. Cleans and lubricates machines. Reads job order to determine location of holes or cutting lines. Sets controls or installs gears to synchronize action of feed bar or rollers. Adjusts ram stroke of press to specified length, using hand tools. Positions, aligns, and secures work piece against fixtures or stops on machine bed or on die.

**51-4031.03 Press and Press Brake Machine Setters and Set-Up Operators, Metal and Plastic Entry – Mid – Senior level position assuming education and experience prerequisite**

Sets stops on machine bed, changes dies, and adjusts components, such as ram or power press, when making multiple or successive passes. Measures work piece and verifies dimensions and weight, using micrometer, template, straightedge, and scale. Plans sequence of operations, applying knowledge of physical properties of metal. Lifts, positions, and secures work piece between dies of machine, using crane and sledge. Grinds out burrs and sharp edges, using portable grinder, speed lathe, and polishing jack. Hand forms, cuts, or finishes work piece, using tools, such as table saw, hand sledge and anvil, flaring tool, and gauge. Lubricates work piece with oil. Preheats work piece, using heating furnace or hand torch. Inspects work piece for defects. Installs, aligns, and secures gears, holding fixtures, dies to machine bed, using gauges, templates, feelers, shims, and hand tools. Operates power press, power brake, apron brake, swaging machine, foot-powered press, hydraulic press, or arbor press according to specifications. Selects and positions flat, block, radius, or special purpose die sets into ram and bed of machine, using hoist, crane, measuring instruments and hand tools.

**51-4031.04 Shear and Slitter Machine Setters and Set-Up Operators, Metal and Plastic Entry – Mid – Senior level position assuming education and experience prerequisite**

Installs and aligns knives, disk cutters or fixtures to shear, bevel, or trim fabricated items. Hones cutters with oilstone to remove nicks. Observes machine operation and examines cut strips for flatness, holes, burrs, and surface defects. Lubricates and cleans machine. Lifts work piece manually or by hoist, and positions and secures against guides and stops. Lays out cutting lines on metal stock to obtain maximum number of pieces from stock. Measures dimensions of work piece, using tape, gauge, template, or rule and square, for conformance to specifications. Tests and adjusts cutting speed and action, according to specified length of product, using gauges and hand tools. Operates shear or slitter that cuts or shears metal, such as plates, sheets, slabs, billets, or bars, to size. Reads production schedule to determine setup or adjustment of equipment. Threads end of metal coil from reel through slitter and secures ends on re-coiler. Selects, cleans, and installs spacers, rubber sleeves, and cutter on arbors. Starts machine, adjusts blade and controls, using wrenches, rule, gauge, or template, and monitors operation.

**51-4032.00 Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic Entry – Mid – Senior level position assuming education and experience prerequisite**

Operates single- or multiple-spindle drill press to bore holes to perform machining operations on metal, nonmetallic, or plastic work pieces. Studies machining instructions to determine dimensional and finish specifications, sequence of operation, setup, and tooling requirements. Installs tool in spindle. Selects cutting tool according to instructions and knowledge of metal properties. Operates tracing attachment to duplicate contours from templates or models. Lifts work piece either manually or with hoist onto machine table, or directs crane operator to lift and position work piece. Verifies conformance of machined work to specifications, using measuring instruments, such as calipers, micrometers, and fixed and telescoping gauges. Positions and secures work piece on table with bolts, jigs, clamps, shims, or other holding devices, using machining hand tools. Lays out reference lines and machining locations on work, applying knowledge of shop math and layout techniques, using layout tools.

**51-4033.01 Grinding, Honing, Lapping, and Deburring Machine Set-Up Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Moves machine controls to index work piece and adjust machine for pre-selected operational settings. Activates machine start-up switches to grind, lap, hone, debar, shear, or cut work piece, according to specifications. Computes machine indexing and settings for specified dimension and base reference points. Observes and adjusts machine operation. Mounts and positions tools in machine chuck, spindle, or other tool holding device to specifications, using hand tools. Grinds, sharpens, or hones tools, dies, and products to prescribed dimensions, using power tools, hand tools, and precision measuring instruments. Lifts and positions work piece manually or with hoist, and secures in hopper, on machine table, faceplate or chuck, using clamps. Inspects or measures work piece, using measuring instruments, such as gauges or micrometers for conformance to specifications. Maintains stock of machine parts and machining tools.

Repairs or replaces machine parts using hand tools or notifies engineering personnel when corrective action is required. Brushes or sprays lubricating compound on work piece or turns valve handle and directs flow of coolant against tool and Work piece. Measures work pieces and lays out work, using precision measuring devices. Studies blueprints, work order, or machining instructions to determine product dimensions, tooling, and to plan operational sequence. Selects machine tooling to be used in machine operation, utilizing knowledge of machine and production requirements. Threads and hand feeds materials through machine cutters or abraders.

**51-4033.02 Buffing and Polishing Set-Up Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Sets and adjusts machine controls according to product specifications, utilizing knowledge of machine operation. Repairs or replaces machine parts to maintain machine in operational condition. Removes work piece and examines finish or luster to ensure surface meets specifications. Starts and observes machine operation for conformance to specifications. Selects buffing or polishing tools and positions and mounts tools to machine tool, chuck, or jig, using hand tools. Reads work order to determine parts to be buffed or polished. Holds stick of buffing compound or turns valve and depresses pedal to administer coolant to work piece surface. Selects and attaches work piece holding fixture to drive mechanism, and positions or clamps work piece to fixture.

**51-4034.00 Lathe and Turning Machine Tool Setters, Operators, and Tenders Metal and Plastic Entry – Mid – Senior level position assuming education and experience prerequisite**

Installs holding fixtures, cams, gears, and stops to control stock and tool movement, using hand tools, power tools, and measuring instruments. Moves tool holder manually or by turning hand wheel, or engages automatic feeding mechanism, to feed tools to and along work piece. Selects cutting tools and tooling instructions, according to knowledge of metal properties and shop mathematics, or written specifications. Positions, secures, and aligns cutting tools in tool holders on machine, using hand tools, and verifies their position with measuring instruments. Observes operation and stops machine to inspect finished work piece and verify conformance with specifications of first-run, using measuring instruments. Mounts attachments, such as relieving or tracing attachments, to perform operations, such as duplicating contours of template or trimming work piece. Studies blueprint, layout, or chart, to visualize work and determine materials needed, sequence of operations, dimensions, and tooling instructions. Computes unspecified dimensions and machine settings, using knowledge of metal properties and shop mathematics. Lifts metal stock or work piece manually or using hoist, and positions and secures it in machine, using fasteners and hand tools. Replaces worn tools and sharpens dull cutting tools and dies. Moves controls to set cutting speeds and depths, and feed rates and to position tool in relation to workplace. Cranks machine through cycle, stopping to adjust tool positions and machine controls, to ensure specified timing, clearance, and tolerances. Starts machine, and turns valve handle to direct flow of coolant on work area or coats disk with spinning compound.

**51-4035.00 Milling and Planing Machine Setters, Operators, and Tenders, Metal and Plastic Entry – Mid – Senior level position assuming education and experience prerequisite**

Selects and installs cutting tool, stylus, and other accessories according to specifications, using hand tools or power tools. Moves controls to set cutting specifications, position cutting tool and work piece in relation to each other, and start machine. Moves cutter or material manually or by turning hand wheel, or engages automatic feeding mechanism to millwork piece to specifications. Observes machine operation and adjusts controls to ensure conformance with specified tolerances. Selects cutting speed, feed rate, and depth of cut, applying knowledge of metal properties and shop mathematics. Verifies alignment of work piece on machine, using measuring instruments, such as rules, gauges, or calipers. Turns valve to begin and regulate the flow of coolant on work area. Studies blueprint, layout, sketch, or other specifications to determine materials needed, sequence of operations, dimensions, and tooling instructions. Computes dimensions, tolerances, and angles, of work piece or machine according to specifications and knowledge of metal properties and shop mathematics. Positions and secures work piece on machine, using holding devices, measuring instruments, hand tools, and hoists. Verifies conformance of finished work piece to specifications, using measuring instruments, such as microscopes, gauges, calipers, and micrometers. Removes work piece and template or model from machine. Mounts attachments and other tools, such as pantograph, engraver, or router, to perform other operations, such as drilling or boring. Replaces worn tools, using hand tools. Sharpens dull tools, using bench grinder. Makes templates or cutting tools.

Records production output.

**51-4041.00 Machinists Entry – Mid – Senior level position assuming education and experience prerequisite**

Studies sample parts, blueprints, drawings, and engineering information to determine methods and sequence of operations to fabricate product. Assembles parts into completed units, using jigs, fixtures, hand tools, and power tools. Calculates and sets controls to regulate machining, or enters commands to retrieve, input, or edit computerized machine

control media.

Measures, examines, and tests completed units to detect defects and ensure conformance to specifications. Operates brazing, heat-treating, and welding equipment to cut, solder, and braze metal. Cleans, lubricates, and maintains machines, tools, and equipment to remove grease, rust, stains, and foreign matter. Cuts and shapes sheet metal and heats and bends metal to specified shape. Observes and listens to operating machines or equipment to diagnose machine malfunction and determine need for adjustment or repair. Evaluates experimental procedures and recommends changes or modifications for efficiency and adaptability to setup and production. Tests experimental models under simulated operating conditions for such purposes as development, standardization, and feasibility of design. Designs fixtures, tooling, and experimental parts to meet special engineering needs. Confers with engineering, supervisory, and manufacturing personnel to exchange technical information. Establishes work procedures for fabricating new structural products, using variety of metalworking machines. Installs experimental parts and assemblies, such as hydraulic systems, electrical wiring, lubricants, and batteries into machines and mechanisms. Dismantles machine or equipment, using hand tools and power tools, to examine parts for defect or to remove defective parts. Installs repaired part into equipment and operates equipment to verify operational efficiency. Lays out and verifies dimensions of parts, using precision measuring and marking instruments and knowledge of trigonometry. Fabricates, assembles, and modifies tooling, such as jigs, fixtures, templates, and molds or dies to produce parts and assemblies. Operates metalworking machine tools, such as lathe, milling machine, shaper, or grinder to machine parts to specifications. Selects, aligns, and secures holding fixtures, cutting tools, attachments, accessories, and materials onto machines.

**51-4051.00 Metal-Refining Furnace Operators and Tenders Entry – Mid – Senior level position assuming education and experience prerequisite**

Manipulates controls to ignite burners, adjust fuel mixtures, open and close furnace doors, or to load and discharge materials into or from furnace. Regulates supply of fuel and air or controls flow of electric current and water coolant to heat furnaces. Observes color and fluidity of molten metal and obtains test sample of metal from furnace or kettle for analysis. Sprinkles chemicals over molten metal to bring impurities to surface and removes impurities, using strainers. Inspects furnace and equipment for defects and wear and directs work-crew in cleaning and repairing furnace walls and flooring. Draws smelted metal samples from furnace for analysis and calculates type and amount of material required to correct smelting process. Scrapes accumulations of metal oxides from floors, molds, and crucibles and sifts and stores for reclamation. Weighs materials to be charged into furnace or to maintain prescribed weight, using scales. Records data and maintains production logs. Examines and prepares material to load into furnace, including cleaning, crushing, or applying chemicals, using crushing machine, shovel, rake, or sprayer. Analyzes metal test sample, according to specific instructions and for specific and for specific element content. Drains, transfers, or removes molten metal from furnace or into molds by hoist or pumps or ladles. Observes inside of furnace operations by television screen and operates controls to move or discharge metal work piece. Observes air and temperature gauges or metal color and turns fuel valves or adjusts controls to maintain required temperature. Kindles fire and shovels fuels and other materials into furnaces or onto conveyors by hand, with hoists, or by directing crane operator.

**51-4052.00 Pourers and Casters, Metal Entry – Mid – Senior level position assuming education and experience prerequisite**

Pours molten metal into molds and forms, using ladle. Turns valves to circulate water through core or sprays water on filled molds to cool and solidify metal. Assembles and imbeds cores in casting frames, using hand tools and equipment. Collects samples or signals workers to sample metal for analysis. Removes metal ingots or cores from molds, using hand tools, cranes, and chain hoists. Transports metal ingots to storage areas, using forklift. Repairs and maintains metal forms and equipment, using hand tools, sledges, and bars. Stencils identifying information on ingots and pigs, using special hand tools. Examines molds to ensure they are clean, smooth, and properly coated. Loads specified amount of metal and flux into furnace or clay crucible. Skims slag or removes excess metal from ingots or equipment, using hand tools, strainers, rakes, or burners, and recycles scrap. Positions equipment or signals workers to position equipment such as ladles, grinding wheels, or crucibles. Reads temperature gauges, observes color changes, and adjusts furnace flame, torch, or electrical heating unit to melt metal. Adds metal to molds to compensate for shrinkage.

**51-4061.00 Model Makers, Metal and Plastic Entry – Mid – Senior level position assuming education and experience prerequisite**

Sets up and operates machines, such as lathes, drill presses, punch presses, or band saw, to fabricate prototypes or models. Studies blueprint, drawings, or sketches, and computes dimensions for laying out materials and planning model production. Aligns, fits, and joins parts, using bolts or screws or by welding or gluing. Wires and solders electrical and electronic connections and components. Assembles mechanical, electrical, and electronic components into models or prototypes, using hand tools, power tools, and fabricating machines. Records specifications, production operations, and final dimensions of model for use in establishing operating standards and machinery procedures. Consults and confers

with engineering personnel to discuss developmental problems and recommend modifications to correct or improve performance of product. Makes bridges, plates, wheels, cutting teeth on wheels and pinions, and threaded screws. Devises and constructs own tools, dies, molds, jigs, and fixtures, or modifies existing tools and equipment. Inspects and tests model or other product to verify conformance to specifications, using precision measuring instruments or circuit tester. Reworks or alters component model or parts as required to ensure performance of equipment or that parts meet standards. Fabricates metal or plastic parts, using hand tools. Grinds, files, and sands parts to finished dimensions. Drills, countersinks, and reams holes in parts and assemblies for bolts, screws, and other fasteners, using power tools. Lays out and marks reference points and dimension on materials, using measuring instruments and drawing or scribing tools. Cuts, shapes, and forms metal parts, using lathe, power saw, snips, power brakes and shear, files, and mallets. Determines fixtures, machines, tooling, and sequence of operations to fabricate parts, dies, and tooling, according to drawings and sketches.

**51-4062.00 Patternmakers, Metal and Plastic Entry – Mid – Senior level position assuming education and experience prerequisite**

Sets up and operates machine tools, such as milling machines, lathes, drill presses, and grinders, to machine castings or pattern. Operates welding equipment to weld pattern together. Cleans and fine finishes pattern or template, using emery cloth, files, scrapers, and power grinders. Marks identification numbers or symbols onto pattern or template. Repairs and reworks templates and patterns. Covers or sprays pattern used in producing plastic with plastic-impregnated fabric or coat of sealing lacquer or wax. Constructs platforms, fixtures, and jigs for holding and placing patterns. Makes templates or files for own use in inspection and finishing of particular shape. Assembles pattern sections, using hand tools, bolts, screws, rivets, or glue. Studies blueprint of part to be cast or pattern to be made, computes dimensions, and plans sequence of operations. Designs and develops template or pattern according to work orders, sample parts, or mockups. Lays out and draws or scribes pattern onto material, using compass, protractor, ruler, scribe, or other instruments. Verifies conformance of pattern or template dimensions to specifications, using measuring instruments such as calipers, scales, and micrometers. Cuts, trims, shapes, and forms patterns or templates, using hand tools and power tools.

**51-4071.00 Foundry Mold and Coremakers Entry – Mid – Senior level position assuming education and experience prerequisite**

Forms and assembles slab cores around pattern and positions wire in mold sections to reinforce mold, using hand tools and glue. Cuts spouts, runner holes, and sprue holes into mold. Positions patterns inside mold sections and clamps sections together. Lifts upper mold section from lower and removes molded patterns. Cleans and smoothes molds, cores, and core boxes, and repairs surface imperfections. Moves and positions work pieces, such as mold sections, patterns, and bottom boards, using cranes, or signals others to move work pieces. Pours molten metal into mold, manually or using crane ladle. Rotates sweep board around spindle to make symmetrical molds for convex impressions. Operates ovens to bake cores or furnaces to melt, skim, and flux metal. Sprinkles or sprays parting agent onto pattern and mold sections, to facilitate removal of pattern from mold. Sifts sand and packs sand into mold sections, core box, and pattern contours, using hand or pneumatic ramming tools. Positions cores into lower section of mold and reassembles mold for pouring.

**51-4072.01 Plastic Molding and Casting Machine Setters and Set-Up Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Positions, aligns, and secures assembled mold, mold components, and machine accessories onto machine press bed, and attaches connecting lines. Presses button or pulls lever to activate machine to inject dies and compress compounds to form and cure specified products. Sets machine controls to regulate molding temperature, volume, pressure, and time, according to knowledge of plastics and molding procedures. Installs dies onto machine or press and coats dies with parting agent, according to work order specifications. Reads specifications to determine setup and prescribed temperature and time settings to mold, form, or cast plastic materials. Observes and adjusts machine set up and operations to eliminate production of defective parts and products. Measures and visually inspects products for surface and dimension defects, using precision measuring instruments, to ensure conformance to specifications. Mixes catalysts, thermoplastic materials, and coloring pigments according to formula, using paddle and mixing machine. Repairs and maintains machines and auxiliary equipment, using hand tools and power tools. Trims excess material from part, using knife, and grinds scrap plastic into powder for reuse. Removes finished or cured product from dies or mold, using hand tools and air hose. Weighs premixed compounds and dumps compound into die well or fills hoppers of machines that automatically supply compound to die.

**51-4072.02 Plastic Molding and Casting Machine Operators and Tenders Entry – Mid – Senior level position assuming education and experience prerequisite**

Starts machine that automatically liquefies plastic material in heating chamber, injects liquefied material into mold, and ejects molded product. Turns valves and dials of machines to regulate pressure and temperature, to set press-cycle time, and to close press. Observes continuous operation of automatic machine and width and alignment of plastic sheeting to ensure side flanges. Pulls level and toggle latches to fill mold and regulate tension on sheeting and to release mold covers. Dumps plastic powder, preformed plastic pellets, or preformed rubber slugs into hopper of molding machine. Feels stiffness and consistency of molded sheeting to detect machinery malfunction. Breaks seals that hold plastic product in molds, using hand tool, and removes product from mold. Heats plastic material prior to forming product or cools product after processing to prevent distortion. Weighs prescribed amounts of material for molded part and finished product to ensure specifications are maintained. Removes product from mold or conveyor, and cleans and reloads mold. Positions mold frame to correct alignment and tubs containing mixture on top of mold to facilitate loading of molds. Examines molded product for surface defects, such as dents, bubbles, thin areas, and cracks. Fills tubs, molds, or cavities of machine with plastic material in solid or liquid form prior to activating machine. Trims flashing from product. Signals coworker to synchronize feed of materials into molding process. Throws flash and rejected parts into grinder machine to be recycled. Reports defect in molds to supervisor. Stacks molded parts in boxes or on conveyor for subsequent processing or leaves parts in mold to cool. Mixes and pours liquid plastic into rotating drum of machine that spreads, hardens, and shapes mixture. Observes meters and gauges to verify specified temperatures, pressures, and press-cycle times.

**51-4072.03 Metal Molding, Coremaking, and Casting Machine Setters and Set-Up Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Moves controls to start, set, or adjust casting, molding, or pressing machines. Repairs or replaces worn or defective machine parts and dies. Obtains and moves specified pattern to work station, manually or using hoist, and secures pattern to machine, using wrenches. Removes castings from dies and dips castings in water to cool, using pliers or tongs. Preheats die sections with torch or electric heater. Stacks and mounts rotor core laminations over keyed mandrel of casting machine, and removes and stamps rotor with identifying data. Lines cylinder pot with asbestos strips and disk to prevent chilling. Loads metal ingots or aluminum bars into melting furnace, and transfers molten metal to reservoir of die casting machine. Connects water hose to cooling system of die, using hand tools. Cleans and lubricates casting machine and dies, using air hose and brushes. Inspects castings and core slots for defects, using fixed gauges. Loads die sections into machine, using equipment such as chain fall or hoist, and secures in position, using hand tools. Pours molten metal into cold-chamber machine or cylinders, using hand ladle.

**51-4072.04 Metal Molding, Coremaking, and Casting Machine Operators and Tenders Entry – Mid – Senior level position assuming education and experience prerequisite**

Starts and operates furnace, oven, die casting, coremaking, metal molding, or rotating machines to pour metal or create molds and casts. Positions ladles or pourers and adjusts controls to regulate the flow of metal, sand, or coolant into mold. Removes casting from mold, mold from press, or core from core box, using tongs, pliers, hydraulic ram, or by inversion. Pours or loads metal or sand into melting pot, furnace, mold, core box or hopper, using shovel, ladle, or machine. Observes and records data from pyrometers, lights, and gauges to monitor molding process and adjust furnace temperature. Signals or directs other workers to load conveyor, spray molds, or remove ingots. Requisitions molds and supplies and inventories and records finished products. Weighs metals and powders and computes amounts of materials necessary to produce mixture of specified content. Smooths and cleans inner surface of mold, using brush, scraper, air hose, or grinding wheel, and fills imperfections with refractory material. Sprays, smokes, or coats molds with compounds to lubricate or insulate mold, using acetylene torches or sprayers. Skims or pours dross, slag, or impurities from molten metal, using ladle, rake, hoe, spatula, or spoon. Assembles shell halves, patterns, and foundry flasks, and reinforces core boxes, using glue, clamps, wire, bolts, rams, or machines. Inspects metal casts, and molds for cracks, bubbles, or other defects and measures castings to ensure specifications met. Repairs or replaces damaged molds, pipes, belts, chains, or other equipment, using hand tools, hand-powered press, or jib crane. Cleans, glues, and racks cores, ingots, or finished products for storage. Cuts spouts and pouring holes in molds and sizes hardened cores, using saws. Fills core boxes and mold patterns with sand or powders, using ramming tools or pneumatic hammers, and removes excess. Positions, aligns, and secures molds or core boxes in holding devices or under pouring spouts and tubes, using hand tools.

**51-4072.05 Casting Machine Set-Up Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Sets up matrices in assembly stick by hand according to specifications. Stops machine when galley is full or when strip is completed. Inserts and locks galley or matrix case into place on machine. Positions composing stick to length of line

specified in casting instructions. Forwards galley to appropriate personnel for proofing. Removes and stores assembly stick, controller reel, and matrix case. Places reel of controller paper on holder, threads around reels, and attaches to winding roll. Starts machine and monitors operation for proper functioning.

**51-4081.01 Combination Machine Tool Setters and Set-Up Operators, Metal and Plastic Entry – Mid – Senior level position assuming education and experience prerequisite**

Sets up and operates lathes, cutters, borers, millers, grinders, presses, drills, and auxiliary machines to make metallic and plastic work pieces. Moves controls or mounts gears, cams, or templates in machine to set feed rate and cutting speed, depth, and angle. Monitors machine operation and moves controls to align and adjust position of work pieces and action of cutting tools. Selects, installs, and adjusts alignment of drills, cutters, dies, guides, and holding devices, using template, measuring instruments, and hand tools. Starts machine and turns hand wheels or valves to engage feeding, cooling, and lubricating mechanisms. Reads blueprint or job order to determine product specifications and tooling instructions and to plan operational sequences. Measures and marks reference points and cutting lines on work piece, using traced templates, compasses, and rules. Computes data, such as gear dimensions and machine settings, applying knowledge of shop mathematics. Inspects first-run work pieces and verifies conformance to specifications to check accuracy of machine setup. Lifts, positions, and secures work pieces in holding devices, using hoists and hand tools. Makes minor electrical and mechanical repairs and adjustments to machines, and notifies supervisor when major service is required. Records operational data such as pressure readings, length of stroke, feeds, and speeds. Instructs operators or other workers in machine setup and operation.

**51-4081.02 Combination Machine Tool Operators and Tenders, Metal and Plastic Entry – Mid – Senior level position assuming education and experience prerequisite**

Activates and tends or operates machines to cut, shape, thread, bore, drill, tap, bend, or mill metal or non-metallic material. Observes machine operation to detect work piece defects or machine malfunction. Positions, adjusts, and secures work piece against stops, on arbor, or in chuck, fixture, or automatic feeding mechanism manually or using hoist. Reads job specifications to determine machine adjustments and material requirements. Aligns layout marks with die or blade. Extracts or lifts jammed pieces from machine, using fingers, wire hooks, or lift bar. Inspects work piece for defects and measures work piece, using rule, template, or other measuring instruments to determine accuracy of machine operation. Adjusts machine components and changes worn accessories, such as cutting tools and brushes, using hand tools. Sets machine stops or guides to specified length as indicated by scale, rule or template. Installs machine components, such as chucks, boring bars, or cutting tools, according to specifications, using hand tools. Removes burrs, sharp edges, rust, or scale from work piece, using file, hand grinder, wire brush, or power tools. Performs minor machine maintenance, such as oiling or cleaning machines, dies, or work pieces, or adding coolant to machine reservoir.

**51-4111.00 Tool and Die Makers Entry – Mid – Senior level position assuming education and experience prerequisite**

Studies blueprints or specifications and visualizes shape of die, part, or tool. Measures, marks, and scribes metal or plastic stock to lay out machining, using instruments, such as protractors, micrometers, scribes, and rulers. Lifts, positions, and secures machined parts on surface plate or worktable, using hoist, vises, v-blocks, or angle plates. Verifies dimensions, alignments, and clearances of finished parts, using measuring instruments, such as calipers, gauge blocks, micrometers, and dial indicators. Sets pyrometer controls of heat-treating furnace, and feeds or places parts, tools, or assemblies into furnace to harden. Designs tools, jigs, fixtures, and templates for use as work aids. Casts plastic tools or parts, or tungsten-carbide cutting tips, using pre-made molds. Cuts, shapes, and trims blank or block to specified length or shape, using power saws, power shears, rule, and hand tools. Fabricates saw blades, using power roller to straighten blade stock, punch press to cut teeth, and power grinder to sharpen teeth. Connects wiring and hydraulic lines to install electrical and hydraulic components. Inspects die for smoothness, contour conformity, and defects by touch or visually, using loupe or microscope. Operates power press to test completed dies, and applies pigment to die to indicate high spots which require reworking. Sets up and operates drill press to drill and tap holes in parts for assembly. Repairs or modifies tools and dies, using machine tools and hand tools. Fits and assembles parts, using bolts, glue, and other fasteners, and hand tools, such as hammers and wrenches. Smooths and polishes flat and contoured surfaces of parts or tools, using scrapers, abrasive stones, files, emery cloth, or power grinder. Sets up and operates machine tools, such as lathes, milling machines, shapers, and grinders, to machine parts. Computes dimensions of assembly and plans sequence of operations.

**51-4121.01 Welders, Production Entry – Mid – Senior level position assuming education and experience prerequisite**

Welds or tack welds metal parts together, using spot welding gun or hand, electric, or gas welding equipment.

Ignites torch and regulates flow of gas and air to obtain desired temperature, size, and color of flame. Preheats work pieces preparatory to welding or bending, using torch. Fills cavities or corrects malformation in lead parts and hammers out bulges and bends in metal work pieces. Positions and secures work piece, using hoist, crane, wire and banding machine, or hand tools. Climbs ladders or works on scaffolds to disassemble structures. Signals crane operator to move large work pieces. Examines work piece for defects and measures work piece with straightedge or template to ensure conformance with specifications. Dismantles metal assemblies or cuts scrap metal, using thermal-cutting equipment such as flame-cutting torch or plasma-arc equipment. Selects, positions, and secures torch, cutting tips, or welding rod, according to type, thickness, area, and desired temperature of metal. Connects hoses from torch to tanks of oxygen and fuel gas, and turns valves to release mixture. Guides and directs flame or electrodes on or across work piece to straighten, bend, melt, or build up metal. Fuses parts together, seals tension points, and adds metal to build up parts.

**51-4121.02 Welders and Cutters Entry – Mid – Senior level position assuming education and experience prerequisite**

Welds metal parts or components together, using brazing, gas, or arc welding equipment. Guides electrodes or torch along weld line at specified speed and angle to weld, melt, cut, or trim metal. Reviews layouts, blueprints, diagrams, or work orders in preparation for welding or cutting metal components. Selects and installs torch, torch tip, filler rod, and flux, according to welding chart specifications or type and thickness of metal. Ignites torch or starts power supply and strikes arc. Preheats work piece, using hand torch or heating furnace. Positions work pieces and clamps together or assembles in jigs or fixtures. Inspects finished work piece for conformance to specifications. Chips or grinds off excess weld, slag, or spatter, using hand scraper or power chipper, portable grinder, or arc-cutting equipment. Cleans or degreases parts, using wire brush, portable grinder, or chemical bath. Welds in flat, horizontal, vertical, or overhead position. Repairs broken or cracked parts, fills holes and increases size of metal parts, using welding equipment. Connects and turns regulator valves to activate and adjust gas flow and pressure to obtain desired flame. Selects and inserts electrode or gas nozzle into holder and connects hoses and cables to obtain gas or specified amperage, voltage, or polarity.

**51-4121.03 Welder-Fitters Entry – Mid – Senior level position assuming education and experience prerequisite**

Lays out, positions, and secures parts and assemblies according to specifications, using straightedge, combination square, calipers, and ruler. Tack-welds or welds components and assemblies, using electric, gas, arc, or other welding equipment. Cuts work piece, using powered saws, hand shears, or chipping knife. Heats, forms, and dresses metal parts, using hand tools, torch, or arc welding equipment. Observes tests on welded surfaces, such as hydrostatic, x-ray, and dimension tolerance to evaluate weld quality and conformance to specifications. Inspects grooves, angles, or gap allowances, using micrometer, caliper, and precision measuring instruments. Installs or repairs equipment, such as lead pipes, valves, floors, and tank linings. Removes rough spots from work piece, using portable grinder, hand file, or scraper. Melts lead bar, wire, or scrap to add lead to joint or to extrude melted scrap into reusable form. Welds components in flat, vertical, or overhead positions. Ignites torch and adjusts valves, amperage, or voltage to obtain desired flame or arc. Analyzes engineering drawings and specifications to plan layout, assembly, and welding operations. Determines required equipment and welding method, applying knowledge of metallurgy, geometry, and welding techniques. Develops templates and other work aids to hold and align parts.

**51-4121.04 Solderers Entry – Mid – Senior level position assuming education and experience prerequisite**

Melts and applies solder along adjoining edges of work pieces to solder joints, using soldering iron, gas torch, or electric-ultrasonic equipment. Heats soldering iron or work piece to specified temperature for soldering, using gas flame or electric current. Aligns and clamps work pieces together, using rule, square, or hand tools, or positions items in fixtures, jigs, or vise. Grinds, cuts, buffs, or bends edges of work pieces to be joined to ensure snug fit, using power grinder and hand tools. Removes work pieces from molten solder and holds parts together until color indicates that solder has set. Cleans work pieces, using chemical solution, file, wire brush, or grinder. Cleans tip of soldering iron, using chemical solution or cleaning compound. Melts and separates soldered joints to repair misaligned or damaged assemblies, using soldering equipment. Applies flux to work piece surfaces in preparation for soldering. Dips work pieces into molten solder or places solder strip between seams and heats seam with iron to band items together. Melts and applies solder to fill holes, indentations, and seams of fabricated metal products, using soldering equipment.

**51-4121.05 Brazers Entry – Mid – Senior level position assuming education and experience prerequisite**

Guides torch and rod along joint of work piece to heat to brazing temperature, melt braze alloy, and bond work pieces together. Turns valves to start flow of gases, lights flame, and adjusts valves to obtain desired color and size of flame. Melts and separates brazed joints to remove and straighten damaged or misaligned components, using hand torch or furnace. Examines seam and re-brazes defective joints or broken parts. Aligns and secures work pieces in fixtures, jigs, or vise, using rule, square, or template. Cuts carbon electrodes to specified size and shape using cutoff saw. Removes work piece from fixture using tongs, and cools work piece using air or water. Cleans joints of work pieces using wire brush or by

dipping them into cleaning solution. Brushes flux onto joint of work piece or dips braze rod into flux to prevent oxidation of metal. Connects hoses from torch to regulator valves and cylinders of oxygen and specified fuel gas, acetylene or natural. Adjusts electric current and timing cycle of resistance welding machine to heat metal to bonding temperature. Selects torch tip, flux, and brazing alloy from data charts or work order.

**51-4122.01 Welding Machine Setters and Set-Up Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Sets-up and operates welding machines that join or bond components to fabricate metal products or assemblies. Turns and presses controls, such as cranks, knobs, and buttons to adjust and activate welding process. Feeds work piece into welding machine to join or bond components. Observes and listens to welding machine and its gauges to ensure welding process meets specifications. Operates welding machine to produce trial work pieces, used to examine and test. Positions and adjusts fixtures, attachments, or work pieces on machine, using hand tools. Lays out, fits, or tacks work pieces together using hand tools. Stops and opens holding device on welding machine, using hand tools. Examines metal product or assemblies to ensure specifications are met. Adds components, chemicals, and solutions to welding machine, using hand tools. Tends auxiliary equipment used in welding process. Cleans and maintains work pieces and welding machine parts, using hand tools and equipment. Devises and builds fixtures used to bond components, during the welding process. Tests products and records test results and operational data on specified forms.

**51-4122.02 Welding Machine Operators and Tenders Entry – Mid – Senior level position assuming education and experience prerequisite**

Operates or tends welding machines that join or bond components to fabricate metal products and assemblies. Turns and presses knobs and buttons to adjust and start welding machine. Observes and listens to welding machine and its controls to ensure welding process meets specifications. Enters operating instructions into computer to adjust and start welding machine. Positions and adjusts fixtures, attachments, or work piece on machine, using hand tools and measuring devices. Reads production schedule and specifications to ascertain product to be fabricated. Stops and opens holding device on welding machine, using hand tools. Inspects metal work piece to ensure specifications are met, using measuring devices. Tends auxiliary equipment used in the welding process. Adds chemicals or solutions to welding machine to join or bond components. Cleans and maintains work pieces and welding machine parts, using hand tools and equipment. Transfers components, metal products, and assemblies, using moving equipment.

**51-4122.03 Soldering and Brazing Machine Setters and Set-Up Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Selects torch tips, alloy, flux, coil, tubing and wire, according to metal type and thickness, data charts, and records. Connects, forms, and installs parts to braze, heat-treat, and spot-weld work piece, metal parts, and components. Sets dials and timing controls to regulate electrical current, gas flow pressure, heating/cooling cycles, and shut-off. Positions, aligns, and bolts holding fixtures, guides, and stops onto or into brazing machine to position and hold work pieces. Fills hoppers and positions spout to direct flow of flux, or manually brushes flux onto seams of work pieces. Starts machine to complete trial run, readjusts machine, and records setup data. Assembles, aligns, and clamps work pieces into holding fixture to bond, heat-treat, or solder fabricated metal components. Manipulates levers to synchronize brazing action or to move work piece through brazing process. Operates and trains workers to operate heat-treating equipment to bond fabricated metal components according to blueprints, work orders, or specifications. Disconnects electrical current, and removes and immerses work piece into water or acid bath to cool and clean component. Examines work piece for defective seams, solidification, and adherence to specifications, and anneals finished work piece to relieve internal stress. Cleans, lubricates, and adjusts equipment to maintain efficient operation, using air hose, cleaning fluid, and hand tools.

**51-4122.04 Soldering and Brazing Machine Operators and Tenders Entry – Mid – Senior level position assuming education and experience prerequisite**

Operates or tends soldering and brazing machines that braze, solder, or spot-weld fabricated products or components. Moves controls to activate and adjust soldering and brazing machines. Observes meters, gauges, and machine to ensure solder or brazing process meets specifications. Loads and adjusts work pieces, clamps, and parts onto machine, using hand tools. Adds chemicals and materials to work pieces or machines, using hand tools. Removes work pieces and parts from machinery, using hand tools. Cleans and maintains work pieces and machines, using equipment and hand tools. Examines and tests soldered or brazed products or components, using testing devices. Reads and records operational information on specified production reports.



**51-4191.01 Heating Equipment Setters and Set-Up Operators, Metal and Plastic Entry – Mid – Senior level position assuming education and experience prerequisite**

Mounts fixtures and industrial coil on machine and work pieces in fixture, using hand tools. Replaces worn dial-feed, burner and conveyor parts, using hand tools. Crushes random samples between fingers to determine hardness. Instruct new workers in machine operation. Sets frequency of current and automatic timer. Estimates flame temperature and heating cycle based on degree of hardness required and metal to be treated. Reads work order to determine processing specifications. Visually examines or tests objects, using hardness testing equipment, to determine flame temperature and degree of hardness. Starts conveyors and dial feeder plates, and turns setscrews in nozzles to direct flames, which anneal specific area of object. Lights gas burners and adjusts flow of gas and coolant water.

**51-4191.02 Heat Treating, Annealing, and Tempering Machine Operators and Tenders, Metal and Plastic Entry – Mid – Senior level position assuming education and experience prerequisite**

Sets automatic controls, observes gauges, and operates gas or electric furnace used to harden temper, or anneal metal parts. Covers parts with charcoal before inserting in furnace to prevent discoloration caused by rapid heating. Cleans oxides and scale from parts or fittings, using steam spray or immersing parts in chemical and water baths. Signals forklift operator to deposit or extract containers of parts into and from furnaces and quenching rinse tanks. Tests parts' for hardness, using hardness testing equipment, and stamps heat treatment identification mark on part, using hammer and punch. Examines parts to ensure metal shade and color conform to specifications, utilizing knowledge of metal heat-treating. Removes parts from furnace after specified time and air dries or cools parts in water or oil brine or other baths. Adjusts speed and operates continuous furnace through which parts are passed by means of reels and conveyors. Sets up and operates die-quenching machine to prevent parts from warping. Reads production schedule to determine processing sequence and furnace temperature requirements for objects to be heat-treated. Loads parts into containers, closes furnace door, and inserts parts into furnace when specified temperature is reached. Reduces heat and allows parts to cool in furnace. Activates and tends electric furnace that anneals base sections of hardened parts for subsequent machining. Positions part in fixture, presses buttons to light burners and tends flame hardening machine, according to procedures, to Case harden metal parts.

**51-4191.03 Heaters, Metal and Plastic Entry – Mid – Senior level position assuming education and experience prerequisite**

Ignites furnace with torch, and turns valve to regulate flow of fuel and air to burners. Positions plastic sheet and mold in plastic bag, heats material under lamps, and forces confrontation of sheet to mold by vacuum pressure. Removes material from furnace, using crane, or signal crane operator to transfer to next station. Positions stock in furnace, using tongs, chain hoist, or pry bar. Assists workers in repairing, replacing, cleaning, lubricating, or adjusting furnace equipment, using hand tools. Records time and production data. Signals coworker to charge steel into furnace. Impregnates fabric with plastic resins and cuts fabric into strips. Pushes cart to curing oven or places part in autoclave. Removes part and cuts away plastic bag. Positions part in plastic bag and seals bag with iron. Removes stock from furnace, using cold rod, tongs or chain hoist, and places stock on conveyor for transport to work area. Places part on cart, connects vacuum line to tube, and smooths bag around part to ensure vacuum. Adjusts controls to maintain temperature and heating time, using thermal instruments and charts, dials and gauges of furnace, and color of stock. Sets oven controls or turns air-pressure valve or autoclave. Inserts vacuum tube into bag and seals bag around tube with tape. Adjusts controls to synchronize speed of feed and take-off conveyors of furnace. Starts conveyors and opens furnace doors to load stock, or signals crane operator to uncover soaking pits and lower ingots into them.

**51-4192.00 Layout Workers, Metal and Plastic Entry – Mid – Senior level position assuming education and experience prerequisite**

Details location and sequence of cutting, drilling, bending, rolling, punching, and welding operations, using compass, protractor, dividers, and rule. Locates centerline and verifies template position, using measuring instruments, including gauge blocks, height gauges, and dial indicators. Marks curves, lines, holes, dimensions, and welding symbols onto work piece, using scribes, soapstone, punches, and hand drill. Determines reference points and computes layout dimensions and works to tolerances, as close as 0.001 inch. Examines work piece and verifies such requirements as dimensions and squareness, using rule, square, and straightedge. Lifts and positions work piece in relation to surface plate manually or with hoist, using parallel blocks and angle plates. Plans and develops layout from blueprints and templates, applying knowledge of trigonometry, design, effects of heat, and properties of metal. Applies pigment to layout surfaces, using paintbrush. Inspects machined parts to verify conformance to specifications. Fits and aligns fabricated parts for welding or

assembly operations. Adds dimensional details to blueprints or drawings by other workers and designs templates of wood, paper, or metal.

**51-4193.01 Electrolytic Plating and Coating Machine Setters and Set-Up Operators, Metal and Plastic Entry – Mid – Senior level position assuming education and experience prerequisite**

Moves controls to permit electrodeposition of metal on object or to regulate movement of wire strand to obtain specified thickness. Adjusts voltage and amperage, based on observations.

Determines size and composition of object to be plated and amount of electrical current and time required, following work order. Suspends object, such as part or mold, from cathode rod (negative terminal) and immerses object in plating solution. Suspends stick or piece of plating metal from anode (positive terminal) and immerses metal in plating solution. Mixes chemical solutions, fills tanks and charges furnaces. Removes plated object from solution at periodic intervals and observes object to ensure conformance to specifications. Plates small objects, such as nuts or bolts, using motor-driven barrel. Immerses object in cleaning and rinsing baths to complete plating process. Examines object at end of process to determine thickness of metal deposit or measures thickness, using instruments, such as micrometers. Measures, marks, and masks areas excluded from plating. Grinds, polishes, or rinses object in water and dries object to maintain clean even surface.

**51-4193.02 Electrolytic Plating and Coating Machine Operators and Tenders, Metal and Plastic Entry – Mid – Senior level position assuming education and experience prerequisite**

Measures or estimates amounts of electric current needed and time required to coat objects. Adjusts dials to regulate flow of current and voltage supplied to terminals to control plating process. Positions objects to be plated in frame or suspends them from positive or negative terminals of power supply. Removes object from plating solution after specified time or when desired thickness of metal is deposited on them. Mixes and tests plating solution to specified formula and turns valves to fill tank with solution. Monitors and measures thickness of electroplating on component part to verify conformance to specifications, using micrometer. Mixes forming acid solution, treats battery plates, and removes and rinses formed plates. Immerses objects to be coated or plated into cleaning solutions or sprays with conductive solution to prepare object for plating. Rinses coated object in cleansing liquids and dries with cloth, centrifugal driers, or by tumbling in sawdust filled barrels. Lubricates moving parts of plating conveyor and cleans plating and cleaning solution tanks.

**51-4193.03 Non-Electrolytic Plating and Coating Machine Setters and Set-Up Operators, Metal and Plastic Entry – Mid – Senior level position assuming education and experience prerequisite**

Measures and sets stops, rolls, brushes, and guides on automatic feeder and conveying equipment or coating machines, using micrometer, rule, and Adjusts controls to set temperatures of coating substance, and adjusts speeds of machines and equipment. Attaches nozzle, positions gun, connects hoses, and threads wire to set up metal-spraying machine. Ignites gun and adjusts controls to regulate wire feed, air pressure, and flow of oxygen and fuel to operate metal-spraying machine. Installs gears and holding devices on conveyor equipment. Reads production schedule to determine setup of equipment and machines. Mixes alodize solution in tank of machine, according to formula, and verifies solution concentration, using gauge. Positions work pieces, starts operation of machines and conveyors, and feeds work pieces into machines to be coated. Adjusts controls to synchronize equipment speed with speed of coating or spraying machine. Operates hoist to place work pieces onto machine feed carriage or spindle. Inspects coated products for defects and specified color and coverage. Operates sandblasting equipment to roughen and clean surface of work pieces. Preheats work pieces in oven.

**51-4193.04 Non-Electrolytic Plating and Coating Machine Operators and Tenders, Metal and Plastic Entry – Mid – Senior level position assuming education and experience prerequisite**

Observes gauges and adjusts controls of machine to regulate functions, such as speed and temperature, according to specifications. Sprays coating in specified pattern according to instructions and inspects area for defects, such as air bubbles or uneven coverage. Presses or turns controls to activate and set equipment operation according to specifications. Positions and feeds materials on plate into machine, manually or automatically, for processing. Fills machine receptacle with coating material or solution. Immerses work pieces in coating solution for specified time. Mixes coating material or solution according to formula, or uses premixed solutions. Places materials on racks and transfers to oven to dry for a specified period of time. Removes excess material or impurities from objects, using air hose or grinding machine. Cuts metal or other materials, using shears or band saw. Measures or weighs materials, using ruler, calculator, and scale. Positions containers to receive parts, and loads or unloads materials in containers, using dolly or hand truck. Cleans and maintains equipment, using water hose and scraper. Solders equipment and visually examines for completeness. Cleans work pieces, using wire brush. Maintains production records. Replaces worn parts and adjusts equipment components, using hand tools.

**51-4194.00 Tool Grinders, Filers, and Sharpeners Entry – Mid – Senior level position assuming education and experience prerequisite**

Sets-up, operates, and adjusts grinding or polishing machines to grind metal work pieces, such as dies, parts, and tools. Files or finishes surface of work piece, using prescribed hand tool. Selects and mounts grinding wheels on machines, according to specifications, using hand tools and applying knowledge of abrasive and grinding procedures. Straightens work piece and removes dents in work piece, using straightening press and hammers. Computes number, width, and angle of cutting tool, micrometer, scales, and gauges and adjusts tool to produce specified cuts. Studies blueprint or layout of metal work piece to visualize grinding procedure and plan sequences of operations. Measures and examines work piece to verify that dimensions meet specifications. Cleans and lubricates machine parts. Removes finished work piece from machine and places in boxes or racks, depending on size of work piece. Inspects dies to detect defects, assess wear, and verify specifications, using micrometers, steel gauge pins, and loupe. Fits parts together in pre-assembly to ensure dimensions are accurate. Forms specified section of work piece and repairs cracks in work piece, using welding or brazing equipment. Removes and replaces machine parts, using hand tools. Duplicates work piece contours, using tracer attachment. Places work piece in electroplating solution or applies pigment to surfaces of work piece to highlight ridges and grooves. Turns valves to direct flow of coolant against cutting wheel and work piece. Examines and feels surface of work piece to verify grinding meets specifications. Observes and listens to machine operation to determine whether adjustments are necessary to ensure work pieces meet specifications. Tends machine that grinds, files, or polishes work piece. Dresses grinding wheel, according to specifications.

**51-5011.01 Bindery Machine Setters and Set-Up Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Installs bindery machine devices, such as knives, guides, and clamps to accommodate sheets, signatures or books of specified sizes. Starts machines and makes trial runs to verify accuracy of machine setup. Fills glue pot and adjusts flow of glue and speed of conveyors. Observes and monitors machine operations to detect malfunctions and makes required adjustments. Manually stocks supplies such as signatures, books, or paper. Records time spent on specific tasks and number of items produced, for daily production sheet. Trains workers to set up, operate, and use automatic bindery machines. Removes books or products from machine and stacks them. Cleans and lubricates machinery parts and makes minor repairs. Examines product samples for defects. Reads work order to determine work instructions. Threads wire into machine to load stitcher head for stapling. Positions and clamps stitching heads on cross arms to space stitches to specified lengths. Sets machine controls to adjust length and thickness of folds, stitches or cuts, and to adjust speed and pressure. Mounts and secures rolls or reels of wire, cloth, paper or other material onto machine spindles and fills paper feed.

**51-5011.02 Bindery Machine Operators and Tenders Entry – Mid – Senior level position assuming education and experience prerequisite**

Operates or tends machines that perform binding operations, such as pressing, folding, and trimming on books and related articles. Moves controls to adjust and activate bindery machine to meet specifications. Feeds books and related articles, such as periodicals and pamphlets, into binding machines, following specifications. Stitches or fastens endpapers or bindings, stitches signatures, and applies glue along binding edge of first and last signatures of books. Threads spirals in perforated holes of items to be bound, using spindle or rollers. Opens machine and removes and replaces damaged covers and book, using hand tools. Cleans work area and maintains equipment and workstations, using hand tools. Maintains records of daily production, using specified forms. Wraps product in plastic, using machine, and packs products in boxes. Rolls, bends, smooths, and folds sheets, using hands, and stacks sheets to be returned to binding machines. Removes printed material or finished products from machines or conveyor belts, and stacks material on pallets or skids. Applies materials on books or related articles, using machine. Creases or compresses signatures before affixing covers, and places paper jackets on finished books. Examines printed material and related products for defects and to ensure conformance to specifications. Punches holes in paper sheets and fastens sheets, signatures, or other material, using hand or machine punch or stapler. Removes broken wire pieces from machine and loads machine with spool of wire. Inserts illustrated pages, extra sheets, and collated sets into catalogs, periodicals, directories, and other printed products, and applies labels to envelopes, using hands or machine. Selects, loads, and adjusts work pieces and machine parts, using hand tools.

**51-5012.00 Bookbinders Entry – Mid – Senior level position assuming education and experience prerequisite**

Applies glue to back of book, using brush or glue machine, and attaches cloth backing and headband. Attaches endpapers to top and bottom of book body, using sewing machine, or glues endpapers and signatures together along spine, using brush or glue machine. Inserts book body in device that forms back edge of book into convex shape and produces grooves to facilitate attachment of cover. Trims edges of book to size, using cutting or book trimming machine or hand cutter. Packs, weighs, and stacks books on pallet for shipment. Places bound book in press that exerts

pressure on cover until glue dries. Folds printed sheets to form signatures (pages) and assembles signatures in numerical order to form book body. Compresses sewed or glued signatures to reduce book to required thickness, using hand press or smashing machine. Imprints and embosses lettering, designs, or numbers on cover, using gold, silver, or colored foil and stamping machine. Applies color to edges of signatures, using brush, pad, or atomizer. Glues outside endpapers to cover. Cuts binder board to specified dimension, using board shears, hand cutter, or cutting machine. Cuts cover material to specified dimensions and fits and glues material to binder board manually or by machine.

**51-5021.00 Job Printers Entry – Mid – Senior level position assuming education and experience prerequisite**

Selects type from type case and inserts type in printer's stick to reproduce material in copy. Lays form on proof press, inks type, fastens paper to press roller, and pulls roller over form to make proof copy. Pushes button to start press, examines printed sheets, and adjusts press when printing is defective. Corrects errors by resetting type and improves impression by tapping face of type with hammer. Cleans ink rollers at end of run. Sets feed guides according to size and thickness of paper. Fills ink fountain and moves lever to adjust flow of ink. Positions form (type in locked chase) on bed of press and tightens clamps, using wrench. Removes assembled type from galley and places type on composing stone. Places chase over type, inserts quoins, and locks chase to hold type. Slides type from stick into galley. Inserts spacers between words and leads between lines. Reads proof for errors and clarity of impression. Runs proof sheet through press and examines sheet for clarity of impression.

**51-5022.01 Hand Compositors and Typesetters Entry – Mid – Senior level position assuming education and experience prerequisite**

Inserts spacers between words or units to balance and justify lines. Prepares proof copy of setup, using proof press. Measures copy with line gauge to determine length of line. Arranges galleys of linotype slugs (takes) in sequence on correction table. Cleans type after use and distributes it to specified boxes in type case. Removes incorrect portion and manually inserts corrections. Compares symbols on proof with galley symbol, and reads portion of text to locate positions for insertion of corrected slugs. Compares corrected type slugs against proof to detect errors. Transfers type from stick to galley when setup is complete. Selects type from type case and sets it in compositional sequence, reading from copy. Inserts lead, slugs, or lines of quads between lines to adjust length of setup. Arranges, groups, and locks galley setups of type, cuts, and headings in chases, according to dummy makeup sheet.

**51-5022.02 Paste-Up Workers Entry – Mid – Senior level position assuming education and experience prerequisite**

Measures and marks board according to layout to indicate position of artwork, typeset copy, page edges, folds, and colors. Measures artwork and layout space of artwork on paste-up. Cuts typeset copy and artwork to size, applies adhesive, and aligns artwork and typeset copy on board, following position marks. Compares measurements, using ruler and proportion wheel, to determine proportions needed to make reduced or enlarged photographic prints for paste-up. Operates electronic plotter to draw artwork positions on paste-up. Applies masking film to artwork layout space on overlay to create clear space on negative for subsequent addition of artwork. Makes negatives or prints of artwork, using photographic equipment, to prepare artwork for paste-up. Covers photographs and artwork with tissue or tracing paper for protection. Removes excess adhesive from board, using scissors, artist's knife, and drafting instruments. Writes specifications on tracing paper to provide information for other workers. Draws functional and decorative borders around layout, using marking and measuring instruments. Indicates crop marks and enlargement or reduction measurements on photographs with grease pencil to facilitate processing. Operates phototypesetter to prepare typeset copy for paste-up. Tapes transparent plastic overlay to board and positions and applies copy to plastic.

**51-5022.03 Photoengravers Entry – Mid – Senior level position assuming education and experience prerequisite**

Develops and prints negatives, positives, film, or plates by controlled exposure to light, using exposure equipment, chemical baths, and vacuum. Brushes protective solution and powder on plate and starts machine to distribute acid or photosensitizing solution over plate or rollers. Etches designs on metal rollers and plates, using etching machines, hand tools, and acidic chemicals, to produce printing plates and rollers. Computes camera machine settings for film exposure or reproduction, using equipment meter, computer, worksheets, and standard formulas and tables. Studies and compares film negatives or positives with originals or design, to determine photographic requirements and verify reproduction. Matches colors with original to produce balanced color values or intensity design. Examines developed film, proof, or engravings, using magnifier, chalk, or charcoal to evaluate quality and detect errors. Modifies or repairs plates or film, using etching and artist's brush, acid, and hand tools. Mixes caustic or acid solutions. Washes rollers and plates preparatory to etching or to remove resistant solution and photographic emulsion, using water, cleaning solution, and brush. Transfers images, designs, or patterns onto rollers, plates, or film, using photographic or pantographic equipment and techniques, and hand tools. Positions, loads, or mounts copy, plates, film, or rollers and secures into place.

**51-5022.04 Camera Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Feeds film into automatic film processor that develops, fixes, washes, and dries film. Selects and installs screens and filters in camera to produce desired effects. Adjusts camera settings, lights, and lens. Exposes high contrast film for predetermined exposure time. Performs exposure tests to determine line, halftone, and color reproduction exposure lengths for various photographic factors. Mounts material to be photographed on copy board of camera. Measures original layouts and determines proportions needed to make reduced or enlarged photographic prints for Paste-up. Measures density of continuous tone images to be photographed to set exposure time for halftone images. Immerses film in series of chemical baths to develop images and hangs film on rack to dry.

**51-5022.05 Scanner Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Activates scanner to produce positive or negative films for each primary color and black in original copy. Types on scanner keyboard or touches mouse to symbols on scanner video display unit to input software, or moves controls to set scanner to specific color density, size, screen ruling, and exposure adjustments. Loads film into holder, places holder in exposing chamber, and starts mechanism that loads and secures film on scanner drum. Inspects developed film for specified results and quality and forwards acceptable negatives or positives to other workers or customer. Performs tests to determine exposure adjustments on scanner and adjusts scanner controls until specified results are obtained. Positions color transparency, negative, or reflection copy on scanning drum and mounts drum and head on scanner. Analyzes original to evaluate color density, gradation highlights, middle tones, and shadows, using densitometer and knowledge of light and color. Unloads exposed film from scanner and places film in automatic processor to develop image on film.

**51-5022.06 Strippers Entry – Mid – Senior level position assuming education and experience prerequisite**

Cuts image window area to allow exposure to plate or film, using razor or artist's knife. Applies rubber solution and collodion to toughen negative, cuts to size, and immerses in acid bath to prepare negative for stripping. Positions film negatives or positives on light table according to art layout, blueprint, and color register to form film flat. Cuts masks and arranges negatives to prepare for contact printing, plate exposure, or proof making. Assembles and aligns negatives or positives to assure register and fit with units of color. Examines paste-up, artwork, film, prints, and instructions to determine size and dimensions, number of job colors, and camera work needed. Determines proportions needed to reduce or enlarge photographs and graphics to fit in designated area, using calculator or proportion scale. Makes proof from film flat to determine accuracy of flat. Draws ruled lines and borders around negatives or positives. Sends completed flat to proofing area or plate making area for preparation of final proof or lithographic plate. Examines proof returned by customer and makes corrections according to customer specifications. Touches up imperfections, using opaque and brush on negatives, and needle and crayon pencil on photographs. Determines or approves plans and page sequences to lay out job for specific printing press. Examines negatives and photographs to detect defective areas, using lighted viewing table. Strips negative from base. Aligns negatives and masks over unexposed film in vacuum frame to make negatives or positives for final film of each color. Selects and inserts screen tints in film flat, using knowledge of dot percentages required to obtain specific colors.

**51-5022.07 Plate Makers Entry – Mid – Senior level position assuming education and experience prerequisite**

Mounts negative and plate in camera that exposes exposed plate to artificial light through photographic negative, thus transferring image. Transfers image from master plate to unexposed plate and immerses plate in developing solution to develop image on plate. Transfers images by hand and covers surface of plates with photosensitive chemical, using brush, and allows plate to dry. Removes plate-film assembly from vacuum frame and places exposed plate in automatic processor to develop image and dry plate. Examines unexposed photographic plate to detect flaws or foreign particles prior to printing pattern of aperture masks on sensitized steel. Installs and aligns plates in printing case. Punches holes in light-sensitive plate and inserts pins in holes to prepare plate for contact with positive or negative film. Repairs defective plates with missing dots, using photographic touch-up tool and ink. Performs tests to determine time required for exposure by exposing plates and compares exposure to scale which measures tone ranges. Places plate in vacuum frame to align positives or negatives with each other and places masking paper over uncovered areas. Examines plate, using light-box and microscope to detect flaws, verify conformity with master plate, and measure dot size and center. Mixes and applies chemical-based developing solution to plates and replenishes solution in processor to maintain it in working order. Lowers vacuum frame onto plate-film assembly to establish contact between positive-negative film and plate, and sets timer to expose plate.

**51-5022.08 Dot Etchers Entry – Mid – Senior level position assuming education and experience prerequisite**

Places masks over separation negatives or positives and exposes film for specified time, using contact frame and

automatic film processor to reduce size of photographic dots to increase or reduce color. Determines extent of correction and exposure length needed based on experience or predetermined exposure and color charts. Applies opaque to defective areas of film to block out blemishes and pinholes. Compares proof print of color separation negative or positive with customer's original copy and standard color chart to determine accuracy of reproduction. Identifies and marks color discrepancies on print and film. Examines film on light table to determine specified color and color balance, using magnifying glass or densitometer. Prepares photographic masks to protect areas of film not needing correction, using contact frame and automatic film processor or by manually cutting masking material, to correct color by photomechanical method. Prepares dyes and other chemical solutions according to standard and applies solution to inaccurately colored areas of film to correct color by chemical method. Blocks out or modifies color shades of film, using template, brushes, and opaque.

**51-5022.09 Electronic Masking System Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Views monitors for feedback and error prompts, for visual representations of work in progress, and for numerical information such as width of line and last point plotted. Presses button to activate vacuum to hold masking in place and to activate drafting unit that scores masking material with programmed figures. Presses button to transfer data from system memory to disk. Activates plotting drum to make photographic mask exposures. Places material on light table and peels scored figures from masking material, using needle and tape. Removes scored masking material from drafting table. Removes film from plotting drum and puts film in automatic film processor to create masks. Positions artist's layout on digitizing tables of electronic masking system to prepare for data entry in system memory. Studies layout sheet to determine shapes of windows drawn on layout sheet. Loads drafting unit with masking material to prepare for plotting and scoring of programmed figures or loads film into plotting drum to make photographic mask exposure. Touches reference points of designs on layout sheet, using mouse, and presses button of mouse to enter coordinates of design in system memory. Selects options on menu of electronic masking system, such as shape, dimensions of designs to be drawn, register marks, and retrieval of stored designs. Touches symbol of option selected on menu and activates option with mouse.

**51-5022.10 Electrotypers and Stereotypers Entry – Mid – Senior level position assuming education and experience prerequisite**

Inserts pins in base to register stereotype plates to key plate for mat molding. Drills matching holes in series of mounted color stereotype plates to be duplicated. Corrects defects on plate, using engraver's hand tools, punches, and hammers. Aligns and notches mats of color series with key color mat, using matching machine with monochrome magnifier attachment. Sprays plastic mold with silver solution and immerses mold in plating tank. Operates proof press to obtain proof of plate reproduction and registration. Curves plates for cylinder presses, using plate-curving machine. Cuts and pastes pieces of paper-felt or cardboard in nonprinting areas of wood-fiber mat to prevent collapse during casting. Mounts finished plates on wood or metal blocks for flatbed presses, using hammer, nails, or bonding press. Examines plate to detect imperfect formation of lines, type, and halftone dots, using magnifier. Trims mat, using trimming machine, by aligning notches of mat with pins on trimming machine. Operates automatic casting machine to produce electrotype or stereotype printing plates. Forms mold of composed type, using plastic sheet molding or wood-fiber mat, and hydraulic press. Pours metal into casting box or plated mold by hand to produce electrotype or stereotype printing plates. Removes excess metal from edges, back, and nonprinting surface areas of plate, using power shear, milling machines, or routing machine.

**51-5022.11 Plate Finishers Entry – Mid – Senior level position assuming education and experience prerequisite**

Selects cutting position and sets controls of saws, milling machines, and routers following specifications. Operates plate-carving machine to cut plates to fit printing press. Operates press to print proof of plate, observing printing quality. Taps plate with hammer and block to flatten until even. Examines plates with magnifier or microscope to detect flaws using engraver's tools. Rubs surface with finishing material to reveal unevenness. Mounts finished plates on wood or metal blocks using hammer and nails or thermoplastic adhesive and heat press. Operates cutting tools to shave and smooth plates to specified thickness.

**51-5022.12 Typesetting and Composing Machine Operators and Tenders Entry – Mid – Senior level position assuming education and experience prerequisite**

Monitors machines and gauges to ensure and maintain standards. Adjusts feed guides, gauges, and rollers using hand tools. Fills reservoirs with paint or ink. Adjusts and changes gears using hand tools. Inspects product to detect defects. Mixes colors of paint according to formulas. Repairs or replaces worn or broken parts using hand tools. Cleans and lubricates equipment. Measures and records amount of product produced. Selects printing plates, dies, or type according to work order. Installs printing plates, cylinders, or rollers on machine using hand tools and gauges. Mounts materials to be printed onto feed mechanisms and threads materials through guides to machine.



## JOB TITLES AND ASSOCIATED TASKS Sorted by Cognofile

### **51-5022.13 Photoengraving and Lithographing Machine Operators and Tenders Entry – Mid – Senior level position assuming education and experience prerequisite**

Operates machinery such as film processor, graining machine, and varnishing equipment. Paints over pinholes, scratches and reference points on roller using brush and acid resistant paint. Grains printing plates by wet or dry sandblasting or using glass marbles. Examines finished blueprint for specified color, intensity, and sharpness of line. Cuts printing plates from sheets of aluminum and zinc using power shears. Examines printing plates with magnifier for uniformity, size, and structures of grain and washes off excess sediment. Rolls out and hammers used printing plates to remove gripper marks and bent corners. Maintains machinery in working order such as automatic film processor and exposure machine. Copies printed materials such as documents and drawing using blueprint machine. Applies acid resistant ink to varnished copper roller and examines for ink smears or cavities filled with ink. Cuts excess metal and bevels edges of printing plates using routing machine. Immerses and turns printing roller in bath solutions to dissolve coating, develop image, and dye using electric hoist. Mounts finished plates on wood, synthetic or metal blocks either by hand or using automatic plate-mounting equipment.

### **51-5023.01 Precision Printing Workers Entry – Mid – Senior level position assuming education and experience prerequisite**

Operates automatic processor to develop photographs, plates, or base material used in single or multicolor proofs. Sets up and operates various types of cameras to produce negatives, photostats, or plastic or paper printing plates. Immerses exposed materials into chemical solutions to hand develop single or multicolor proofs, or printing plates. Prepares microfiche duplicates of microfilm, using contact printer and developing machine. Puts flats into vacuum frame to produce aluminum plate, microfiche print, or single or multicolor proof. Hand rubs paper against printing plate to transfer specified design onto paper for use in etching glassware. Scans artwork, using optical scanner, which changes image into computer-readable form. Enters, positions, and alters size of text, using computer, to make up and arrange pages to produce printed materials. Sets up and operates bindery equipment to cut, assemble, staple, or bind materials. Maintains printing machinery and equipment. Examines and inspects printed material for clarity of print and specified color. Mixes powdered ink pigments, using matching book and measuring and mixing tools. Reviews layout and customer order to determine size and style of type. Measures density levels of colors or color guides on proofs, using densitometer, and compares readings to set standards. Prints paper or film copies of completed material from computer. Compares test exposures to quality control color guides or exposure guides to determine data for exposure settings. Positions and aligns negatives to assemble flats for reproduction. Operates offset-duplicating machine or small printing press to reproduce single or multicolor copies of line, drawings, graphs, or similar materials.

### **51-5023.02 Offset Lithographic Press Setters and Set-Up Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Examines job order to determine quantity to be printed, stock specifications, colors, and special printing instructions. Washes plate to remove protective gum coating. Applies packing sheets to blanket cylinder to build up blanket thickness to diameter of plate cylinder. Fills ink and dampening solution fountains, and adjusts controls to regulate flow of ink and dampening solution to plate cylinder. Removes and cleans plate and cylinders. Loads paper into feeder or installs rolls of paper, adjusts feeder and delivery mechanisms, and unloads printed material from delivery mechanism. Measures plate thickness and inserts packing sheets on plate cylinder to build up plate to printing height. Starts press and examines printed copy for ink density, position on paper, and registration. Makes adjustments to press throughout production run to maintain specific registration and color density. Measures paper thickness and adjusts space between blanket and impression cylinders according to thickness of paper stock. Installs and locks plate into position, using hand tools, to achieve pressure required for printing.

### **51-5023.03 Letterpress Setters and Set-Up Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Moves controls to set or adjust ink flow, tension rollers, paper guides, and feed controls. Directs and monitors activities of apprentices and feeding or stacking workers. Record and maintain production log sheet. Inspects printed materials for irregularities such as off-level areas, variations in ink volume, register slippage, and poor color register. Reads work orders and job specifications to select ink and paper stock. Operates specially equipped presses and auxiliary equipment, such as cutting, folding, numbering, and pasting devices. Loads, positions, and adjusts unprinted materials on holding fixtures or in feeding mechanism of press. Pushes buttons or moves controls to start printing press and control operation. Monitors feeding and printing operations to maintain specified operating levels and detect malfunctions. Dismantles and reassembles printing unit or parts, using hand tools, to repair, clean, maintain, or adjust press. Mixes colors or inks and fills reservoirs. Positions and installs printing plates, cylinder packing, die, and type forms in press, according to specifications, using hand tools.



## JOB TITLES AND ASSOCIATED TASKS Sorted by Cognofile

### **51-5023.04 Design Printing Machine Setters and Set-Up Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Installs printing plates, cylinders, or rollers on machine, using hand tools and gauges. Monitors machines and gauges to ensure and maintain standards. Inspects product to detect defects. Repairs or replaces worn or broken parts, using hand tools. Measures and records amount of product produced. Cleans and lubricates equipment. Mixes colors of paint according to formulas. Fills reservoirs with paint or ink. Adjusts feed guides, gauges, and rollers, using hand tools. Adjusts and changes gears, using hand tools.

### **51-5023.05 Marking and Identification Printing Machine Setters and Set-Up Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Adjusts machine as needed, using hand tools. Monitors printing process to detect machine malfunctions. Cleans machine and equipment, using solvent and rags. Examines product to detect defects. Sets rate of flow of coloring agent and speed and spacing of materials to achieve desired product. Selects printing plates, dies, or type according to work order. Mounts printing plates, dies, or type onto machine. Fills reservoirs with ink or specified coloring agents. Mounts materials to be printed onto feed mechanisms and threads materials through guides on machine.

### **51-5023.06 Screen Printing Machine Setters and Set-Up Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Sets and adjusts feed rollers, spindle reel, printing screens, and bolts to specifications. Examines product for paint smears, position of design, or other defects and adjusts equipment. Inspects printing equipment and replaces damaged or defective parts, such as switches, pulleys, fixtures, screws, and bolts. Compares ink or paint prepared for printing run with master color swatch to confirm accuracy of match. Adjusts position of design or screen to ensure specified color print registration. Trains workers in use of printing equipment and in quality standards. Counts and records quantities printed in production log. Patrols printing area to monitor production activities and to detect problems, such as mechanical breakdowns or malfunctions. Mixes paints according to formula, using bench mixer. Starts dyeing oven and sets thermostat to temperature specified for printing run. Reviews print order to determine settings and adjustments required to set up manually controlled or automatic screen printing machine or decorating equipment. Determines from orders type and color of designs to print. Measures, centers, and aligns and positions screen, using gauge and hand tools.

### **51-5023.07 Embossing Machine Set-Up Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Sets guides to hold cover in position and adjusts table height to obtain correct depth of impression. Stamps embossing design on work piece, using heated work tools. Makes impression of embossing to desired depth in composition on platen, trims off excess, and allows composition to harden. Mixes embossing composition to putty-like consistency, spreads glue on paten, and applies thin pad of composition over glue. Cuts surface of cardboard leaving design or letters, using hand tools. Removes and stacks embossed covers. Scrapes high spots on counter die to prevent from puncturing paper. Sets sheets singly in gauge pins and starts press. Positions, installs, and locks embossed plate in chase and locks chase in bed of press. Starts machine to lower ram and impress cardboard.

### **51-5023.08 Engraver Set-Up Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Positions machine mechanisms and depresses levers to apply marks on roller. Inserts mandrel through roller and lifts into position on machine. Measures depth of engraving and weighs diamond points, using gauges and scales. Records ground setting, length of roller, width of engraving, and circumference of roller on production sheet. Examines marks on roller to verify alignment and detect defects. Determines ground setting according to weight of fabric, type of design, and colors in design. Turns screws to align machine components. Aligns plate with markings on machine table and tacks to table. Adjusts and tightens levers in position, using hand tools.

### **51-5023.09 Printing Press Machine Operators and Tenders Entry – Mid – Senior level position assuming education and experience prerequisite**

Pushes buttons, turns handles or moves controls and levers to start printing machine or manually controls equipment operation. Reviews work order to determine ink, stock and equipment needed for production. Blends and tests paint, inks, stains and solvents according to type of material being printed and work order specifications. Inspects and examines printed products for print clarity, color accuracy, conformance to specifications and external defects. Pours or spreads paint, ink, color compounds and other materials into reservoirs, troughs, hoppers or color holders of printing unit. Directs and monitors activities of workers feeding, inspecting and tending printing machines and materials. Keeps daily time and materials usage reports and records identifying information printed on manufactured products and parts. Packs and labels cartons, boxes or bins of finished products. Accepts orders, calculates and quotes prices and receives payments from



customers. Discards or corrects misprinted materials, using ink eradicators or solvents. Dismantles and reassembles printing unit or parts, using hand and power tools, to repair, maintain or adjust machine. Cleans and lubricates printing machine and components (e.g., rollers, screens, typesetting, reservoirs) using oil, solvents, brushes, rags and hoses. Removes printed materials from press, using hand truck, electric lift or hoist, and transports them to drying, storage or finishing areas. Monitors and controls operation of auxiliary equipment, such as cutters, folders, drying ovens and sanders to assemble and finish product. Monitors feeding, printing and racking processes of press to maintain specified operating levels and detect malfunctions. Turns, pushes or moves controls to set and adjust speed, temperature, ink flow, and position and pressure tolerances of press. Selects and installs printing plates, rollers, screens, stencils, type, die, and cylinders in machine according to specifications, using hand tools. Loads, positions and adjusts unprinted materials on holding fixture or in loading and feeding mechanisms of press.

**51-6011.02 Precision Dyers Entry – Mid – Senior level position assuming education and experience prerequisite**

Matches sample color applying knowledge of bleaching agent and dye properties, and type, construction, condition, and color of article. Immerses article in dye solution and stirs with stick or dyes article in rotary drum or paddle dyeing machine. Rinses article in water and acetic acid solution to remove excess dye and to fix colors. Applies dye to article, using spray gun, electrically rotated brush or hand brush. Operates or directs operation of extractor and drier. Sprays or brushes article with prepared solution to remove stains. Dissolves dye or bleaching chemicals in water. Measures and mixes amounts of bleaches, dyes, oils, and acids following formulas. Immerses article in bleaching bath to strip colors. Examines article to identify fabric and original dye by sight, touch, or by testing sample with fire or chemical reagent. Tests dye on swatch of fabric, to ensure color match.

**51-6021.01 Pressers, Delicate Fabrics Entry – Mid – Senior level position assuming education and experience prerequisite**

Operates machine presses to finish parts that can be pressed flat and completes other parts by pressing with hand iron. Finishes pleated garments determining size of pleat from evidence of old pleat or from work order using machine press or hand iron. Inserts heated metal form into tie and touches up rough places with hand iron. Presses ties on small pressing machine. Finishes parts difficult to reach such as flounces by fitting parts over puff irons. Finishes velvet garments by steaming them on buck of hot head press or steam table and brushing pile with hand brush. Finishes fancy garments with hand iron to produce high quality finishes, which cannot be obtained on machine presses.

**51-6021.02 Pressing Machine Operators and Tenders- Textile, Garment, and Related Materials Entry – Mid – Senior level position assuming education and experience prerequisite**

Activates pressing machine to remove wrinkles from garments and flatwork items, or shape, form or patch articles. Selects, installs, and adjusts machine components, including pressing forms, rollers, and guides, according to pressing instructions using hoist and hand tools. Removes finished pieces from pressing machine and hangs or stacks for cooling, or forwards for additional processing. Moistens materials to soften and smoothes and straightens materials with hands, to prepare for machine pressing. Presses materials, such as garments, drapes, and slipcovers using hand iron. Cleans and maintains pressing machines using cleaning solutions and lubricants. Hangs, folds, packages, and tags finished articles for delivery to customer. Applies cleaning solvents, and brushes materials made of suede, leather, and felt, to remove spots, and raise and smooth nap. Shrinks, stretches, or blocks articles by hand, to conform to original measurements, using forms, blocks, and steam. Sews end of new material to leader or to end of material in pressing machine using sewing machine. Examines and measures finished articles to verify conformance to standards, using measuring devices, including tape measure and micrometer. Positions materials, such as cloth garments, felt, or straw on table, die, or feeding mechanism of pressing machine. Lowers iron, ram, or pressing head of machine into position over material to be pressed. Activates and adjusts machine controls to regulate temperature and pressure of rollers, ironing shoe, or plates, according to specifications.

**51-6021.03 Pressers, Hand Entry – Mid – Senior level position assuming education and experience prerequisite**

Pushes and pulls iron over surface of article, according to type of fabric. Adjusts temperature of iron, according to fabric type, and uses covering cloths to prevent scorching or sheen on delicate fabrics. Fits odd-shaped pieces, which cannot be pressed flat over puff iron. Places article in position on ironing board or worktable. Sprays water over fabric to soften fibers when not using steam iron. Pins, folds, and hangs article after pressing. Measures fabric to specifications, cuts uneven edges with shears, folds material, and presses with iron to form heading. Smoothes and shapes fabric prior to pressing.

**51-6031.01 Sewing Machine Operators, Garment Entry – Mid – Senior level position assuming education and experience prerequisite**

Starts and operates or tends machines that automatically join, reinforce, or decorate material or fabricated articles.

Replaces and rethreads needles. Positions material or article in clamps, template, or hoop frame prior to automatic operation of machine. Guides garment or garment parts under machine needle and presser foot to sew parts together. Records number of garment parts or complete garments sewn. Inspects garments and examines repair tags and markings on garment to locate defects or damage. Cuts material and threads, using scissors. Replaces sewing machine parts and performs basic maintenance, such as oiling machine. Draws markings or pins appliqué on fabric to obtain variation in design and marks stitching errors with pins or tape. Bastes edges of material to align and temporarily secure garment parts for final assembly. Selects supplies, such as fasteners and thread, according to specifications or characteristics of fabric. Removes holding devices and finished item from machine. Attaches tape, trim, or elastic to specified garments or garment parts, according to item specifications. Folds or stretches edges or length of items, while sewing, to facilitate forming specified sections. Attaches buttons or fasteners to fabric, using feeding hopper or clamp holder. Observes sewing machine operation to detect defects in stitching or machine malfunction, and notifies supervisor. Sews replacement parts or missing stitches, according to repair tickets. Turns knobs, screws, and dials to adjust settings of machine, according to garment style and observation of operation. Draws thread through guides, tensions, and needles and adjusts machine functions, according to fabric type. Positions item under needle, using marks on machine, clamp or template, edges of cloth, or markings on cloth as guides.

**51-6031.02 Sewing Machine Operators, Non-Garment Entry – Mid – Senior level position assuming education and experience prerequisite**

Activates and adjusts machine controls to regulate stitching speed and length, dimensions of gathers and tucks, and material or thread tension. Positions materials through feed rollers and guides, or positions and maneuvers under sewing machine presser foot and needle during operation. Examines and measures finished articles to verify conformance to standards, using ruler. Places spools of thread, cord, or other materials on spindles, inserts bobbin, and threads ends through machine guides and components. Selects supplies, such as binding, cord, or thread, according to specifications or color of material. Sews materials by hand, using needle and thread. Records amount of materials processed in production logs. Removes finished materials from sewing machine. Tapes or twists together thread or cord to repair breaks. Positions and marks patterns on materials to prepare for sewing. Replaces needles, sands rough areas of needles with sandpaper, and cleans and oils sewing machines to maintain equipment. Cuts materials, according to specifications, or cuts excess material or thread from finished product, using blade, scissors, or electric knife. Folds or fits together materials, such as cloth, foam rubber, or leather, to prepare for machine sewing. Mounts attachments, such as needles, cutting blades, or pattern plates, and adjusts machine guides according to specifications. Monitors machine operation to detect problems, such as defective stitching, breaks in thread, or machine malfunction. Activates sewing machine to join, gather, hem, reinforce, or decorate materials or fabricated articles, such as linens, toys, or luggage.

**51-6041.00 Shoe and Leather Workers and Repairers Entry – Mid – Senior level position assuming education and experience prerequisite**

Assembles product according to specifications, utilizing sewing machine, needle and thread, or leather lacing, glue, clamps, or rivets. Dyes, soaks, paints, stamps, or engraves leather or other materials to obtain desired effect or shape. Fabricates articles such as purses, wallets, belts, luggage frames, and shoes. Inserts and positions padding, foam cushioning, or lining and glues or stitches into place. Inspects article for defects and removes damaged or worn parts, using hand tools. Trims and buffs, bevels, or flares work piece to specified size and shape. Draws pattern, using measurements, plaster cast, or customer specifications, and positions or outlines pattern on work piece. Reads prescription or specifications and measures item, using calipers, tape measures, or rule. Drills or punches holes and inserts metal rings, handles, and hardware. Aligns and stitches or glues materials, such as fabric, fleece, leather, or wood to join parts. Repairs and reconditions products such as trunks, luggage, shoes, and saddles. Selects material and cuts parts along pattern or outline, with knife, shears, or scissors. Attaches accessories or ornamentation to decorate or protect product. Sews rips or patches holes by hand or machine to repair articles, such as purses, shoes, and luggage.

**51-6042.00 Shoe Machine Operators and Tenders Entry – Mid – Senior level position assuming education and experience prerequisite**

Turns setscrew on needle bar and positions required number of needles in designated stitching machines. Draws thread through machine guide slots and needles. Lowers pressure foot or roller to secure parts and starts machine stitching, using hand, foot, or knee controls. Selects and places spools of thread or pre-wound bobbins into shuttles or onto spindles or loupers of stitching machines. Removes and examines shoe parts and design to verify conformance to specifications. Reads shoe part tags to identify appropriate instruction cassette and style and color of thread. Cuts excess thread or material from shoe part, using scissors or knife. Guides shoe into feeding mechanism that attaches, stitches, joins, or reinforces shoe parts, according to instructions. Selects and inserts specified cassettes into consoles of stitching

machine to stitch decorative designs onto shoe parts. Aligns parts to be stitched, following seams, edges, or markings, and positions parts under needle.

**51-6061.00 Textile Bleaching and Dyeing Machine Operators and Tenders Entry – Mid – Senior level position assuming education and experience prerequisite**

Starts machines and equipment to process and finish textile goods prior to further processing, following instructions. Mounts roll of cloth on machine, using hoist or places textile goods in machines or pieces of equipment. Removes items, such as dyed articles, cloth, cones, and bobbins from tanks and machines for drying and further processing. Threads ends of cloth or twine through specified sections of equipment prior to processing. Cleans machines and equipment. Ravels seams connecting cloth ends after processing is completed. Confers with coworkers to ascertain information regarding customer orders, process steps to be completed during shift, or reason for delays. Notifies supervisor of equipment malfunctions and coworkers to initiate steps in processing of textile goods. Records information, such as fabric yardage processed, temperature readings, fabric tensions, machine speeds, and delays caused by range malfunctions. Sews ends of cloth together by hand or using machine to form endless length of cloth to facilitate processing. Examines and feels products to determine variation from processing standards. Weighs ingredient to be mixed together to process textiles. Tests solutions used to process textile goods to detect variations from standards, using standard procedures. Soaks specified textile products for designated time. Keys in processing instructions to program electronic equipment. Creels machine with bobbins or twine. Mixes or adds dyes, water, detergents, or chemicals to tanks to dilute or strengthen solutions as indicated by tests. Observes display screen, control panel and equipment, and cloth entering or exiting process to determine equipment adjustments. Adjusts equipment controls to maintain standards.

**51-6062.00 Textile Cutting Machine Setters, Operators, and Tenders Entry – Mid – Senior level position assuming education and experience prerequisite**

Installs, levels, and aligns components, such as gears, chains, guides, dies, cutters, and needles to set up machinery for operation. Adjusts heating mechanisms, tension and speed of machine operation to produce product meeting desired specifications. Studies guides, samples, charts, and specification sheets, or confers with supervisor or engineering staff to determine setup requirements. Inspects machinery to determine adjustments or repairs needed. Cleans, oils, and lubricates machines, using air hose, cleaning solutions, rags, oilcan, and grease gun. Repairs or replaces worn or defective parts or components using hand tools. Inspects product to ensure product meets specifications and to determine need for machine adjustment. Operates machine for test run to verify adjustments and to obtain sample of product. Threads yarn, thread, and fabric through guides, needles, and rollers of machines. Starts machine, monitors operation, makes adjustments as needed, and stops machine when specified amount of product has been produced.

**51-6063.00 Textile Knitting and Weaving Machine Setters, Operators, and Tenders Entry – Mid – Senior level position assuming education and experience prerequisite**

Installs, levels, and aligns components, such as gears, chains, guides, dies, cutters, and needles to set up machinery for operation. Studies guides, samples, charts, and specification sheets, or confers with supervisor or engineering staff to determine setup requirements. Inspects machinery to determine adjustments or repairs needed. Cleans, oils, and lubricates machines, using air hose, cleaning solutions, rags, oilcan and grease gun. Repairs or replaces worn or defective parts or components, using hand tools. Inspects product to ensure product meets specifications and to determine need for machine adjustment. Operates machine for test run to verify adjustments and to obtain sample of product. Adjusts heating mechanisms, tension and speed of machine operation to produce product meeting desired specifications. Threads yarn, thread, and fabric through guides, needles, and rollers of machines. Starts machine, monitors operation, makes adjustments as needed, and stops machine when specified amount of product has been produced.

**51-6064.00 Textile Winding, Twisting, and Drawing Out Machine Setters, Operators, and Tenders Entry – Mid – Senior level position assuming education and experience prerequisite**

Installs, levels, and aligns components, such as gears, chains, guides, dies, cutters, and needles to set up machinery for operation. Inspects machinery to determine adjustments or repairs needed. Cleans, oils, and lubricates machines, using air hose, cleaning solutions, rags, oilcan and grease gun. Repairs or replaces worn or defective parts or components, using hand tools. Inspects product to ensure product meets specifications and to determine need for machine adjustment. Starts machine, monitors operation, makes adjustments as needed, and stops machine when specified amount of product has been produced. Threads yarn, thread, and fabric through guides, needles, and rollers of machines. Studies guides, samples, charts, and specification sheets, or confers with supervisor or engineering staff to determine setup requirements. Operates machine for test run to verify adjustments and to obtain sample of product. Adjusts heating mechanisms, tension and speed of machine operation to produce product meeting desired specifications.



## JOB TITLES AND ASSOCIATED TASKS Sorted by Cognofile

### **51-6091.01 Extruding and Forming Machine Operators and Tenders, Synthetic or Glass Fibers Entry – Mid – Senior level position assuming education and experience prerequisite**

Operates or tends machines that extrude and form filaments from synthetic materials. Notifies workers of defects and to adjust extruding and forming machines. Records operational data on tag and attaches to machine. Cleans and maintains extruding and forming machines, using hand tools. Removes excess or completed filament from machine, using hand tools. Loads and adjusts materials into extruding and forming machines, using hand tools. Moves controls to activate and adjust extruding and forming machines. Observes machine operation, control board, and gauges to detect malfunctions. Presses buttons to stop machine when process is completed or malfunction detected.

### **51-6092.00 Fabric and Apparel Patternmakers Entry – Mid – Senior level position assuming education and experience prerequisite**

Draws outline of pattern parts, using drafting instruments such as calipers, squares, and straight and curved rules. Positions and cuts out pattern, using scissors and knife. Traces outline of paper onto cardboard pattern, and cuts pattern into parts to make template. Traces outline of specified pattern onto material and cuts fabric, using scissors. Marks finished pattern with garment size, section, and style information. Positions and pins pattern sections onto model form and discusses style lines, details, and revisions with designer. Lays out large patterns on floor and cuts material, according to markings. Makes drawings of garments and patterns, and writes instructions for use in reproducing commercial patterns. Computes dimensions of pattern according to size, considering stretching of material, and measures and marks pattern. Positions master pattern in clamp of grading device, places paperboard under pattern, sets device to specified size, and marks reference points. Positions master pattern on paperboard and drafts reference points based on data from charts. Calculates dimensions and specifications from sales order and enters data on worksheet. Examines sketches or sample articles and design specifications to ascertain number, shape, and size of pattern parts. Draws lines between reference points, producing outline of graded pattern. Draws details on outlined parts to indicate guides in joining parts. Draws patterns for range of garment sizes, grading master pattern for each size, using charts or grading device.

### **51-6093.00 Upholsterers Entry – Mid – Senior level position assuming education and experience prerequisite**

Measures and cuts new covering material, using pattern and measuring and cutting instruments. Adjusts or replaces webbing, padding, and springs and secures them in place. Sews rips or tears in material, or creates tufting, using needle and thread. Draws cutting lines on material following pattern, templates, sketches, or blueprints, using chalk, pencil, paint, or other method. Reads order and applies knowledge and experience with materials to determine type and amount of material required to cover work piece. Refinishes wood surfaces on upholstered or reupholstered furniture. Maintains records of time required to perform each job. Designs upholstery cover patterns. Drills or punches holes in material. Stacks, aligns, and smoothes material on cutting table. Repairs frame of work piece. Removes covering, webbing, padding, and defective springs from work piece, using hand tools. Examines upholstery to locate defects. Attaches fasteners, grommets, buckles, ornamental trim, and other accessories to cover or frame, using hand tools. Attaches binding or applies solutions to edges of cut material to prevent raveling. Fits, installs, and secures material on work piece, using hand tools, power tools, glue, cement, or staples. Operates sewing machine to seam cushions and join various sections of covering material.

### **51-7011.00 Cabinetmakers and Bench Carpenters Entry – Mid – Senior level position assuming education and experience prerequisite**

Sets up and operates machines, including power saws, jointers, mortisers, tenoners, molders, and shapers, to cut and shape woodstock. Sands and scrapes surfaces and joints of articles to prepare articles for finishing. Dips, brushes, or sprays assembled articles with protective or decorative materials, such as stain, varnish, or lacquer. Studies blueprints, drawings, and written specifications of articles to be constructed or repaired and plans sequence of performing such operations. Installs hardware, such as hinges, catches, and drawer pulls, using hand tools. Marks dimensions of parts on paper or lumber stock, following blueprints, and matches lumber for color, grain, and texture. Trims component parts of joints to ensure snug fit, using hand tools, such as planes, chisels, or wood files. Glues, fits, and clamps parts and subassemblies together to form complete unit. Bores holes for insertion of screws or dowel by hand or using boring machine. Drives nails or other fasteners to joints of articles for finishing.

### **51-7021.00 Furniture Finishers Entry – Mid – Senior level position assuming education and experience prerequisite**

Disassembles item, masks area adjacent to those being refinished, and removes accessories using hand tools to prepare for finishing. Finishes surfaces of new furniture pieces to replicate antiques by distressing surfaces with abrasives before staining. Brushes, sprays, or hand rubs finishing ingredients onto and into grain of wood. Spreads graining ink over metal



## JOB TITLES AND ASSOCIATED TASKS Sorted by Cognofile

portions of furniture to simulate wood grain finish. Replaces and refurbishes upholstery of item, using tacks, adhesives, softeners, solvents, stains, or polish. Polishes, sprays, or waxes finished pieces to match surrounding finish. Stencils, gilds, embosses, or paints designs or borders on restored pieces to reproduce original appearance. Mixes finish ingredients to obtain desired color or shade of existing finish. Selects appropriate finishing ingredients, such as paint, stain, lacquer, shellac, or varnish for wood surface. Examines furniture to determine extent of damage or deterioration and determines method of repair or restoration. Removes old finish and damaged or deteriorated parts using hand tools, abrasives, or solvents. Treats warped or stained surfaces to restore original contour or color. Smooths and shapes surfaces with sandpaper, pumice stone, steel wool, or chisel. Washes or bleaches surface to return to natural color or prepare for application of finish. Fills cracks, blemishes, or depressions and repairs broken parts, using plastic or wood putty, glue, nails, or screws.

### **51-7031.00 Model Makers, Wood Entry – Mid – Senior level position assuming education and experience prerequisite**

Plans, lays out, and draws outline of unit, sectional patterns, or full-scale mock-up of products. Trims, smooths and shapes surfaces, and planes, shaves, files, scrapes, and sands models to attain specified shapes using hand tools. Constructs wooden models, templates, full-scale mock-up and molds for parts of products. Shellacs, lacquers, or waxes finished pattern or model. Issues patterns to designated machine operators and maintains pattern record for reference. Marks identifying information such as colors or codes on patterns, parts, and templates to indicate assembly method. Reads blueprints, drawing, or written specifications to determine size and shape of pattern and required machine setup. Fits, fastens, and assembles wood parts together to form pattern, model, or section using glue, nails, dowels, bolts, and screws. Sets up, operates, and adjusts variety of woodworking machines to cut and shape sections, parts, and patterns, according to specifications.

### **51-7032.00 Patternmakers, Wood Entry – Mid – Senior level position assuming education and experience prerequisite**

Plans, lays out, and draws outline of unit, sectional patterns, or full-scale mock-up of products. Trims, smooths and shapes surfaces, and planes, shaves, files, scrapes, and sands models to attain specified shapes using hand tools. Constructs wooden models, templates, full-scale mock-up and molds for parts of products. Reads blueprints, drawing, or written specifications to determine size and shape of pattern and required machine setup. Shellacs, lacquers, or waxes finished pattern or model. Issues patterns to designated machine operators and maintains pattern record for reference. Marks identifying information such as colors or codes on patterns, parts, and templates to indicate assembly method. Sets up, operates, and adjusts variety of woodworking machines to cut and shape sections, parts, and patterns, according to specifications. Fits, fastens, and assembles wood parts together to form pattern, model, or section using glue, nails, dowels, bolts, and screws.

### **51-7041.01 Sawing Machine Setters and Set-up Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Selects knives to achieve specified diameter of cut, or installs bit and dado saw according to work ticket. Aligns and bolts knives in cutter head and screws it on spindle using wrenches. Adjusts angle of table by turning hand wheel, and bolts or clamps holding jigs to table. Places stock in jig and pushed table containing stock into saw or lays stock on conveyor that carries it into machine. Pulls table back against stops and depresses pedal to advance cutter head that shapes end of stock.

### **51-7041.02 Sawing Machine Operators and Tenders Entry – Mid – Senior level position assuming education and experience prerequisite**

Operates and tends saws and machines to cut stock and to adjust machine speed and tension, moving levers and hand wheels. Guides work piece against saw or saw over work piece or operates automatic feeding device to guide cuts. Operates panel board of saw and conveyor system to cut stock to specified dimensions and to move stock through process. Trims defects from stock or work piece to straighten rough edges of lumber using circular power saw. Turns knobs, hand wheels, setscrews, and panel controls, or uses hand tools to position and adjust cutting stops and guides. Adjusts saw blades by turning hand wheels, pressing pedals, levers, and panel buttons, or using wrenches and rulers. Observes approaching lumber on conveyor to determine cut that will produce highest grade. Determines sawing blade, type and grade of stock needed, and cutting procedures according to work order or supervisor's instructions. Mounts and bolts sawing blade or attachments to machine shaft and turns hand wheels to set blade tension. Positions and clamps stock on table, conveyor, or carriage, using hoists, guides, stops, dogs, wedges, and wrench. Moves machine table to specified angle and height by turning hand wheels, cranks, or knobs. Measures work piece to mark for cuts and to verify accuracy of cuts, using ruler, square, or caliper rule. Clears machine jams using hand tools. Unclamps and removes finished work piece from table. Sharpens blades or replaces defective or worn blades and bands using hand tools.

Inspects stock for imperfections and estimates grade or quality of stock of work piece. Lubricates and cleans machines, using wrench, grease gun, and solvents. Unloads and rolls logs from truck to sawmill deck or to carriage or moves logs in pond using pike pole. Counts, sorts, and stacks finished work pieces and disposes of waste material.

**51-7042.01 Woodworking Machine Setters and Set-up Operators, Except Sawing Entry – Mid – Senior level position assuming education and experience prerequisite**

Installs knives, sanding apparatus, cams, cutting heads, bits, chisels, and blades using hand tools. Attaches and adjusts guides, stops, clamps, chucks, and feed mechanisms using hand tools. Starts machine and feeds stock into machine through feed mechanisms or conveyors. Monitors operation of automatic machines and makes adjustments as needed to correct problems and ensure conformance to specifications. Examines blueprints, drawings, and work orders, to determine characteristics of finished item, materials to be used, and machine setup requirements. Adjusts machine table or cutting devices to produce specified cut or operation. Pushes or holds work piece against, under or through cutting, boring or shaping mechanism. Selects knives, sanding apparatus, cams, cutting heads, bits, chisels, and blades. Mounts or clamps stock onto machine. Removes and replaces worn machine parts, knives, bits, belts and sandpaper. Examines work piece visually, by touch, or using tape rule, calipers, or gauges to ensure product meets desired standards. Unclamps and removes work piece from machine, and stacks work piece on pallet or in box. Sharpens knives, bits, and other cutting and shaping tools. Cleans product, machine, or work area, using rags and air hose.

**51-7042.02 Woodworking Machine Operators and Tenders, Except Sawing Entry – Mid – Senior level position assuming education and experience prerequisite**

Starts machine, adjusts controls, and moves lever or depresses pedal to bore, shape, smooth, shave, chip, slice or cut Woodstock. Starts machine and moves lever to engage hydraulic lift to press Woodstock into desired form, allows for drying-time, and removes. Re-adjusts and re-aligns guides of sanding, cutting, or boring machines to correct defects in finished product, using hand tools. Installs and adjusts blades, cutter heads, boring-bits, or sanding-belts in machines, according to work piece, machine function, and specifications, using hand tools. Selects knives, blades, cutter heads, boring-bits, or sanding-belts, according to work piece, machine function, and specifications. Places or secures woodstock against guide or into holding-device prior to feeding into machine. Examines blueprints, drawings, or samples to determine size, type, and setting of machine tools, stops, jigs, and guides to use. Places water-soaked woodstock into form under hydraulic lift to shape for use in making such items as musical instruments. Examines finished work piece for smoothness, shape, angle, depth-of-cut and conformity to specifications, visually and using hands, rule, or other gauges. Examines raw woodstock for defects and to ensure conformity to size and other specification standards. Examines rollers, sanding-belts, knives, cutting or boring devices, and conveyor mechanisms and sharpens or replaces worn parts, using hand tools. Cleans machines, workstation, or conveyor, using air hose, wax, solvents, brushes and rags. Marks or otherwise identifies completed and inspected work piece. Hand-stacks on pallet or conveyor or controls hoist to remove part or product from workstation.

**51-8011.00 Nuclear Power Reactor Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Regulates equipment according to data provided by recording and indicating instruments or computers. Corrects abnormal conditions, following standard practices. Dispatches orders and instructions to personnel through radiotelephone or intercommunication system to coordinate operation of auxiliary equipment. Monitors and operates boilers, turbines, wells, and auxiliary power plant equipment. Notes malfunctions of equipment, instruments, or controls. Monitors gauges to determine effects of generator loading on other power equipment. Monitors computer operated equipment. Adjusts controls to regulate flow of power between generating and substations.

**51-8013.01 Power Generating Plant Operators, Except Auxiliary Equipment Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Operates or controls machinery that generates electric power, using control boards or semiautomatic equipment. Examines and tests electrical power distribution machinery and equipment, using testing devices. Maintains and repairs electrical power distribution machinery and equipment, using hand tools. Compiles and records operational data on specified forms. Adjusts controls on equipment to generate specified electrical power. Monitors control and switchboard gauges to determine electrical power distribution meets specifications.

**51-8013.02 Auxiliary Equipment Operators, Power Entry – Mid – Senior level position assuming education and experience prerequisite**

Tends portable or stationary high-pressure boilers that supply heat or power for engines, turbines, and steam-powered equipment. Replenishes electrolyte in batteries and oil in voltage transformers and resets tripped electric relays.

Reads gauges to verify that units are operating at specified capacity, and listens for sounds warning of mechanical malfunction. Assists in making electrical repairs. Cleans and lubricates equipment and collects oil, water, and electrolyte samples for laboratory analysis to prevent equipment failure or deterioration, Tightens leaking gland and pipe joints and reports need for major equipment repairs. Opens and closes valves and switches in sequence upon signal from other worker to start or shut down auxiliary units.

**51-8021.01 Boiler Operators and Tenders, Low Pressure Entry – Mid – Senior level position assuming education and experience prerequisite**

Tends boilers and equipment to supply and maintain steam or heat for buildings, marine vessels, or operation of pneumatic tools. Shovels coal or coke into firebox to feed fuel, using hand tools. Tests sample quality to ensure sample meets specifications, using testing devices. Obtains samples from designated location on boiler and carries samples to testing laboratory. Records test results on specified form and gives to worker or supervisor. Cleans and maintains heating and steam boilers and equipment, using hand tools. Installs burners and auxiliary equipment, using hand tools. Moves controls and observes gauges to regulate heat and steam. Ignites fuel in burner using torch or flame.

**51-8021.02 Stationary Engineers Entry – Mid – Senior level position assuming education and experience prerequisite**

Adjusts controls and valves on equipment to provide power and regulate and set operations of system and industrial processes. Lubricates, maintains, and repairs equipment, using hand tools and power tools. Tests electrical system to determine voltage, using voltage meter. Adds chemicals or tends equipment to maintain temperature of fluids or atmosphere or to prevent scale buildup. Cleans equipment, using air hose, brushes, and rags, and drains water from pipes and air reservoir. Records temperature, pressure, water levels, fuel consumption, and other data at specified intervals in logbook. Reads dials of temperature, pressure, and ampere gauges and meters to detect malfunctions and ensure specified operation of equipment. Inspects equipment to determine need for repair, lubrication, or adjustment. Lights burners and opens valves on equipment, such as condensers, pumps, and compressors, to prepare system for operation.

**51-8031.00 Water and Liquid Waste Treatment Plant and System Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Operates and adjusts controls on equipment to purify and clarify water, process or dispose of sewage, and generate power. Records operational data, personnel attendance, and meter and gauge readings on specified forms. Maintains, repairs, and lubricates equipment, using hand tools and power tools. Cleans and maintains tanks and filter beds, using hand tools and power tools. Directs and coordinates plant workers engaged in routine operations and maintenance activities. Collects and tests water and sewage samples, using test equipment and color analysis standards. Inspects equipment and monitors operating conditions, meters, and gauges to determine load requirements and detect malfunctions. Adds chemicals, such as ammonia, chlorine, and lime, to disinfect and deodorize water and other liquids.

**51-8091.00 Chemical Plant and System Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Turns valves to regulate flow of product or byproducts through agitator tanks, storage drums, or neutralizer tanks, according to process. Moves control settings to make control adjustments on equipment units affecting speed of chemical reactions and quality and yield. Interprets chemical reactions visible through sight glasses or on television monitor and reviews laboratory test reports for process adjustments. Records operating data, such as process conditions, test results, and instruments readings, calculating material requirements or yield according to formulas. Manually regulates or shuts down equipment during emergency situations, as directed by supervisory personnel. Draws samples of products and conducts quality control tests to monitor processing and ensure standards are met. Confers with technical and supervisory personnel to report or resolve conditions affecting safety, efficiency, and product quality. Inspects equipment for potential and actual hazards, wear, leaks, and other conditions requiring maintenance shutdown. Notifies maintenance, stationary engineering, and other auxiliary personnel to correct equipment malfunction and adjust power, steam, water, or air supply. Gauges tank levels, using calibrated rod. Patrols work area to observe level of carbon in thickener tank and wash solutions in overflow troughs to prevent spills. Defrosts frozen valves, using steam hose. Monitors recording instruments, flowmeters, panel lights, and other indicators, and listens for warning signals to verify conformity of process conditions. Starts pumps to wash and rinse reactor vessels, to exhaust gases and vapors, and to mix product with water.

**51-8092.01 Gas Processing Plant Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Controls fractioning columns, compressors, purifying towers, heat exchangers, and related equipment, to extract nitrogen

and oxygen from air. Observes pressure, temperature, level, and flow gauges to ensure standard operation. Reads log sheet to ascertain demand and disposition of product or to detect equipment malfunctions. Records gauge readings and test results. Calculates gas ratios, using testing apparatus, to detect deviations from specifications. Signals or directs workers tending auxiliary equipment. Cleans and repairs equipment, using hand tools. Tests oxygen for purity and moisture content at various stages of process, using burette and moisture meter. Controls operation of compressors, scrubbers, evaporators, and refrigeration equipment to liquefy, compress, or regasify natural gas. Adjusts temperature, pressure, vacuum, level, flow rate, or transfer of gas, according to test results and knowledge of process and equipment.

**51-8093.02 Petroleum Refinery and Control Panel Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Reads and analyzes specifications, schedules, logs, and test results to determine changes to equipment controls required to produce specified product. Operates control panel to coordinate and regulate process variables and to direct product flow rate, according to prescribed schedules. Observes instruments, gauges, and meters to verify conformance to specified quality and quantity of product. Inspects equipment and listens for automated warning signals to determine location and nature of malfunction, such as leaks and breakage. Repairs, lubricates, and maintains equipment or reports malfunctioning equipment to supervisor to schedule needed repairs. Compiles and records operating data, instrument readings, documents, and results of laboratory analyses. Cleans interior of processing units by circulating chemicals and solvents within unit. Samples and tests liquids and gases for chemical characteristics and color of products, or sends products to laboratory for analysis. Operates auxiliary equipment and controls multiple processing units during distilling or treating operations. Monitors and adjusts unit controls to ensure safe and efficient operating conditions.

**51-8093.03 Gaugers Entry – Mid – Senior level position assuming education and experience prerequisite**

Gauges quality of oil in storage tanks before and after delivery, using calibrated steel tape and conversion. Regulates flow of products into pipelines, using automated pumping equipment. Reads automatic gauges at specified intervals to determine flow rate of oil into or from tanks and amount of oil in tanks. Operates pumps, teletype, and mobile radio. Turns bleeder valves or lowers sample container into tank to obtain oil sample. Calculates test results using standard formulas. Tightens connections with wrenches and greases and oils valves using grease gun and oilcan. Inspects pipelines, valves, and flanges to detect malfunctions, such as loose connections and leaks. Clamps seal around valves to secure tanks. Reports leaks or defective valves to maintenance. Records meter and pressure readings at gas well. Lowers thermometer into tanks to obtain temperature reading. Records readings and test results. Gauges tank containing petroleum and natural gas byproducts, such as condensate or natural gasoline. Starts pumps and opens valves to regulate flow of oil into and out of tanks, according to delivery schedules. Tests oil to determine amount of bottom sediment, water, and foreign materials using centrifugal tester.

**51-9011.01 Chemical Equipment Controllers and Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Sets and adjusts indicating, controlling, or timing devices, such as gauging instruments, thermostat, gas analyzers, or recording calorimeter. Adjusts controls to regulate temperature, pressure, and time of prescribed reaction, according to knowledge of equipment and process. Operates or tends auxiliary equipment, such as heaters, scrubbers, filters, or driers, to prepare or further process materials. Monitors gauges, recording instruments, flow meters, or product to regulate or maintain specified conditions. Directs activities of workers assisting in control or verification of process or in unloading materials. Makes minor repairs and lubricates and maintains equipment, using hand tools. Records operational data such as temperature, pressure, ingredients used, processing time, or test results, in operating log. Flushes or cleans equipment, using steam hose or mechanical reamer. Draws samples of product and sends to laboratory for analysis. Tests sample for specific gravity, chemical characteristics, pH level, concentration, or viscosity. Patrols and inspects equipment or unit to detect leaks and malfunctions. Weighs or measures specified amounts of materials. Reads plant specifications to ascertain product, ingredient, and prescribed modifications of plant procedures. Dumps or scoops prescribed solid, granular, or powdered materials into equipment. Adds treating or neutralizing agent to product and pumps product through filter or centrifuge to remove impurities or precipitate product. Mixes chemicals according to proportion tables or prescribed formulas. Moves controls to adjust feed and flow of liquids and gases through equipment in specified sequence. Starts pumps, agitators, reactors, blowers, or automatic feed of materials. Opens valves or operates pumps to admit or drain specified amounts of materials, impurities, or treating agents to or from equipment.

**51-9011.02 Chemical Equipment Tenders Entry – Mid – Senior level position assuming education and experience prerequisite**

Starts pumps and agitators, turns valves, or moves controls of processing equipment to admit, transfer, filter, or mix



chemicals. Loads specified amounts of chemicals into processing equipment. Weighs, measures, or mixes prescribed quantities of materials. Draws sample of products for analysis to aid in process adjustments and maintain production standards. Drains equipment and pumps water or other solution through to flush and clean tanks or equipment. Inventories supplies received and consumed. Assists other workers in preparing and maintaining equipment. Observes safety precautions to prevent fires and explosions. Notifies maintenance engineer of equipment malfunction. Records data in log from instruments and gauges concerning temperature, pressure, materials used, treating time, and shift production. Tests samples to determine specific gravity, composition, or acidity, using chemical test equipment such as hydrometer or pH meter. Replaces filtering media or makes minor repairs to equipment, using hand tools. Patrols work area to detect leaks and equipment malfunctions, and monitor operating conditions. Observes gauges, meters, and panel lights to monitor operating conditions, such as temperature or pressure. Adjusts valves or controls to maintain system within specified operating conditions.

**51-9012.00 Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders Entry – Mid – Senior level position assuming education and experience prerequisite**

Starts agitators, shakers, conveyors, pumps, or centrifuge machines, turns valves, or moves controls to admit, drain, filter, mix, or transfer materials. Dumps, pours, or loads specified amounts of refined or unrefined materials into equipment or containers for further processing or storage. Sets or adjusts machine controls to regulate conditions, such as material flow, temperature, and pressure, according to specified operating procedures. Monitors material flow and control instruments, such as gauges, indicators, and meters to ensure optimal processing conditions and results. Removes clogs, defects, and impurities from machines, tanks, conveyors, screen, or other processing equipment. Examines samples visually or by hand to verify quality, such as clarity, cleanliness, consistency, dryness, and texture. Measures or weighs materials to be refined, mixed, transferred, stored, or otherwise processed. Communicates or signals processing instructions to other workers. Maintains log of instrument readings, test results, and shift production. Removes full bags or containers from discharge outlets and replaces them with empty ones. Tests samples to determine viscosity, acidity, specific gravity, or degree of concentration, using test equipment, such as viscometer, pH meter, and hydrometer. Collects samples of material or product for laboratory analysis. Cleans tanks, screens, inflow pipes, and other processing equipment, using hoses, brushes, scrapers, or chemical solutions. Lubricates, connects, installs, replaces, or makes minor adjustments or repairs to hoses, pumps, filters, or screens to maintain process. Inspects machines and equipment for hazards, operating efficiency, mechanical malfunctions, wear, and leaks.

**51-9021.00 Crushing, Grinding, and Polishing Machine Setters, Operators, and Tenders Entry – Mid – Senior level position assuming education and experience prerequisite**

Operates or tends machines and equipment that crush, grind, polish, or blend materials. Moves controls to start, stop, or adjust machinery and equipment that crush, grind, polish, or blend materials. Adds or mixes chemicals and ingredients for processing, using hand tools or other devices. Dislodges and clears jammed materials, or other items, from machinery and equipment, using hand tools. Loads materials into machinery and equipment, using hand tools. Observes production monitoring equipment to ensure safety and efficient operation. Tends accessory equipment, such as pumps and conveyors, to move materials or ingredients through production process. Reads work orders to ascertain production specifications and information. Weighs or measures materials, ingredients, and products to ensure conformance to requirements. Records operational and production data on specified forms. Transfers materials, supplies, and products between work areas, using moving equipment and hand tools. Tests samples of materials or products to ensure compliance with specifications, using test equipment. Cleans and maintains machinery, equipment, materials, and products, using hand tools. Collects samples of materials or products for laboratory testing. Examines or feels materials, ingredients, or products to ensure conformance to established standards.

**51-9022.00 Grinding and Polishing Workers, Hand Entry – Mid – Senior level position assuming education and experience prerequisite**

Grinds, sands, cleans, or polishes objects or parts using hand tools or equipment. Applies solutions and chemicals to equipment, objects, or parts using hand tools. Measures and marks equipment, objects, or parts to ensure grinding and polishing standards are met. Records product and processing data on specified forms. Transfers equipment, objects, or parts to specified work areas using moving devices. Sharpens abrasive grinding tools using machines and hand tools. Repairs and maintains equipment, objects, or parts using hand tools. Removes work piece from equipment or worktable using hand tools. Moves controls to adjust, start, or stop equipment during grinding and polishing process. Trims, scrapes or deburrs objects or parts using hand tools or equipment. Selects, loads, and adjusts work piece or abrasive parts onto equipment or worktable using hand tools. Observes and inspects equipment, objects, or parts to ensure specifications are met.

**51-9023.00 Mixing and Blending Machine Setters, Operators, and Tenders Entry – Mid – Senior level position assuming education and experience prerequisite**

Operates or tends machines and equipment that crush, grind, polish, or blend materials. Records operational and production data on specified forms. Transfers materials, supplies, and products between work areas, using moving equipment and hand tools. Tests samples of materials or products to ensure compliance with specifications, using test equipment. Cleans and maintains machinery, equipment, materials, and products, using hand tools. Collects samples of materials or products for laboratory testing. Examines or feels materials, ingredients, or products to ensure conformance to established standards. Reads work orders to ascertain production specifications and information. Loads materials into machinery and equipment, using hand tools. Adds or mixes chemicals and ingredients for processing, using hand tools or other devices. Dislodges and clears jammed materials, or other items, from machinery and equipment, using hand tools. Weighs or measures materials, ingredients, and products to ensure conformance to requirements. Tends accessory equipment, such as pumps and conveyors, to move materials or ingredients through production process. Observes production monitoring equipment to ensure safety and efficient operation. Moves controls to start, stop, or adjust machinery and equipment that crush, grind, polish, or blend materials.

**51-9031.00 Cutters and Trimmers, Hand Entry – Mid – Senior level position assuming education and experience prerequisite**

Cuts materials, such as textiles, food, and metal, using hand tools, portable power tools, or bench-mounted tools. Adjusts guides and stops to control depth and width of cuts. Lowers table-mounted cutter, such as knife blade, cutting wheel, or saw to cut items to specified size. Replaces or sharpens dulled cutting tools, such as saws. Marks identification numbers, trademark, grade, marketing data, size, or model number on products. Observes and marks or discards items with defects, such as spot, stains, scars, snags, chips, scratches, or unacceptable shape or finish. Folds or shapes materials, preparatory to or after cutting. Unrolls, lays out, attaches, or mounts material or item on cutting table or machine. Reads work order to determine dimensions, cutting locations, and quantity to cut. Marks cutting lines around pattern or template, or follows layout points, using square, rule, straightedge and chalk, pencil, or scribe. Positions template or measures material to locate specified point of cut or to obtain maximum yield, using rule, scale, or pattern. Transports items to work or storage area by pushing or pulling carts. Counts or weighs and bundles items. Cleans, treats, buffs, or polishes finished items, using grinder, brush, chisel, and cleaning solutions and polishing materials. Stacks cut items and loads them on racks, conveyors, or onto truck. Separates materials or products according to size, weight, type, condition, color, or shade. Routes items to provide cutouts for parts, using portable router, grinder, and hand tools.

**51-9032.01 Fiber Product Cutting Machine Setters and Set-Up Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Adjusts machine controls to position and align, and to regulate speed and pressure of components. Activates machine to cut, slice, slit, perforate, or score fiber products, such as paperboard sheets, rubber shoe soles, or plaster wallboard. Monitors operation of cutting or slicing machine to detect malfunctions, removes defective or substandard materials, and readjusts machine components to conform to standards. Positions materials, such as rubber, paper, or leather on feeding mechanism of cutting or slicing machine. Replaces worn or broken parts, and cleans and lubricates cutting or slicing machine to maintain equipment in working order. Maintains production records, such as quantity, type, and dimensions of materials produced. Removes completed materials or products from cutting or slicing machine and stacks or stores for additional processing. Examines, measures, and weighs materials or products to verify conformance to specifications, using measuring devices, such as ruler, micrometer, or scale. Reviews work order, blueprints, specifications, or job sample to determine components, settings, and adjustments for cutting and slicing machines. Selects and installs machine components, such as cutting blades, rollers, and templates, according to specifications, using hand tools.

**51-9032.02 Stone Sawyers Entry – Mid – Senior level position assuming education and experience prerequisite**

Starts saw and moves blade across surface of material, such as stone, concrete slabs, and asbestos-cement sheets and pipes, to saw. Starts pump to circulate water and abrasive onto blade or cable during cutting. Turns crank or presses button to move car under sawing cable or saw frame. Observes operation to detect uneven sawing and exhausted abrasive supply and tightens pulleys or adds abrasive to maintain cutting speed. Builds bed of timbers on car, and aligns and levels stone on bed, using crowbar, sledgehammer, wedges, blocks, rule, and spirit level. Marks dimensions or traces on stone according to diagram, using chisel and hammer, straightedge, rule, and chalked string. Operates crane or signals crane operator to position or remove stone from car or saw bed. Washes stone, using water hose, and verifies width or thickness of cut stone, using rule. Aligns cable or blades with marks on stone, and presses button or turns lever to lower sawing cable or blades to stone. Changes or replaces saw blades, cables, and grinding wheels, using wrench. Adjusts blade pressure against stone, using ammeter, and lowers blade in stone as cut depth increases.



## JOB TITLES AND ASSOCIATED TASKS Sorted by Cognofile

### **51-9032.03 Glass Cutting Machine Setters and Set-Up Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Operates single cut machine to cut glass. Removes and replaces worn cutter heads, using hand tools. Measures glass with tape to verify dimensions and observes glass to detect defects. Starts vacuum-cupped crane, to lift and transfer glass. Directs workers on cutting team. Reviews work order and maintains record of production, using counter. Adjusts timing mechanism, to synchronize breaker bar to snap glass at score. Starts machine to verify setup. Adjusts position, height, and stroke of cutting bridges, manually or by turning controls, to score glass to specific dimensions.

### **51-9032.04 Cutting and Slicing Machine Operators and Tenders Entry – Mid – Senior level position assuming education and experience prerequisite**

Starts cutting machine by pressing button, pulling lever, or depressing pedal to cut stock, following markings or specifications. Reads work order, or receives oral instructions, regarding specifications, for stock to be cut. Positions stock along cutting lines, or against stops, on bed of scoring or cutting machine. Feeds stock into cutting machine, conveyor, or under cutting blades, by threading, guiding, pushing, or turning hand wheel. Stacks and sorts cut material according to type and size, for packaging, further processing, or shipping. Moves stock or scrap to and from machine transporting either manually or using cart, hand truck, or lift truck. Records data concerning amount and type of stock cut from duties performed, including weight, length, and width. Cleans and lubricates cutting machine, conveyors, blades, saws, or knives, using steam hose, scrapers, brush, or oil cans. Cuts stock manually, to prepare for machine cutting, using tools such as knife, cleaver, handsaw, or hammer and chisel. Sharpens cutting blades, knives, or saws, using file, bench grinder, or honing stone. Examines and measures stock to ensure conformance to specifications, using ruler, gauge, micrometer or scale, and removes defects. Installs or replaces cutting knives, blades, or wheels, in cutting machine, using hand tools. Marks cutting lines, or identifying information on stock, using marking pencil, ruler, or scribe. Observes cutting machine in operation, to ensure even flow of stock and to detect jamming, improper feeding, or foreign materials. Stops cutting machine when necessary, by pulling lever, pressing button, or depressing pedal, and removes debris. Adjusts feeding guides, blades, settings, or speed, to regulate specified depth, length, or width of material, using hand tools or hands.

### **51-9041.01 Extruding, Forming, Pressing, and Compacting Machine Setters and Set-Up Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Installs dies or molds in machines to produce products from variety of materials, according to work order and specifications. Observes operation of machine and product to detect and diagnose cause of faulty operation and monitors gauges and recorders. Synchronizes speed of sections of machine when producing products involving several steps or processes. Installs, aligns, and adjusts neck rings, press plungers, and feeder tubes to molds to deliver material and form product. Selects and measures arbors and dies to verify size specified on work ticket. Collects, examines, measures, weighs, and tests product to verify machine setup and conformance of product to specifications. Cleans dies, arbors, compression chambers, and molds, using swabs, sponge, or air hose and swabs molds with solution to prevent sticking. Removes products from discharge belts and molds, mold components, and feeder tubes from machines. Ignites burner to preheat product or applies heat, using torch. Feeds product into machine by hand or conveyor. Pours, scoops, or dumps specified ingredients, metal assemblies, or mixtures into sections of machine prior to starting machine. Threads extruded strip through water tank and holddown bars or attaches strands to wire and draws through tube. Adjusts timer drum to set size of product material and rollers, cutoff knives, and stops to regulate thickness and length. Disassembles and repairs machinery and equipment. Routes sample to lab for analysis, according to procedure. Records product information, such as scrap quantity, machine number, and ingredients, to complete work ticket and places tickets with product. Couples air and gas lines to machine to maintain plasticity of material and to regulate solidification of final product. Presses control button to activate machinery and equipment. Operates machines and notifies supervisor or setup personnel of needed adjustments to machines. Turns controls to control machine functions, such as regulate air pressure, create vacuum, and coolant flow.

### **51-9051.00 Furnace, Kiln, Oven, Drier, and Kettle Operators and Tenders Entry – Mid – Senior level position assuming education and experience prerequisite**

Loads equipment receptacle or conveyor with material to be processed, manually or using hoist. Weighs or measures specified amount of material or substance to be processed, using devices such as scales and calipers. Removes product from equipment, manually or using hoist, and prepares for storage, shipment, or additional processing. Reads and interprets work orders and instructions to determine work assignment, process specifications, and production schedule. Transports materials and products to and from work area, manually or using cart, hand truck, or hoist. Confers with supervisor or other equipment operators to report equipment malfunction or resolve problems resulting from process changes. Records gauge readings, test results, and shift production in logbook. Cleans, lubricates, and adjusts equipment, using items such as scrapers, solvents, air hose, oil, and hand tools. Replaces worn or defective equipment

parts, using hand tools. Examines or tests sample of processed substance, or collects sample for laboratory testing, to ensure conformance to specifications. Stops equipment and clears blockages or jams, using fingers, wire, or hand tools. Presses and adjusts controls to activate, set, and regulate equipment operation according to specifications. Monitors equipment operation, gauges, and panel lights to detect deviation from standards.

**51-9061.01 Materials Inspectors Mid – Senior level position assuming education and experience prerequisite**

Inspects materials, products, and work in progress for conformance to specifications, and adjusts process or assembly equipment to meet standards. Analyzes and interprets blueprints, sample data, and other materials to determine, change, or measure specifications or inspection and testing procedures. Reads dials and meters to verify functioning of equipment according to specifications. Fabricates, installs, positions, or connects components, parts, finished products, or instruments for testing or operational purposes. Observes and monitors production operations and equipment to ensure proper assembly of parts, or assists in testing and monitoring activities. Confers with vendors and others regarding inspection results, recommends corrective procedures, and compiles reports of results, recommendations, and needed repairs. Supervises testing or drilling activities, and adjusts equipment to obtain sample fluids or to direct drilling. Operates or tends machinery and equipment, and uses hand tools. Marks items for acceptance or rejection, records test results and inspection data, and compares findings with specifications to ensure conformance to standards. Collects samples for testing, and computes findings. Tests and measures finished products, components, or assemblies for functioning, operation, accuracy, or assembly to verify adherence to functional specifications.

**51-9061.02 Mechanical Inspectors Mid – Senior level position assuming education and experience prerequisite**

Tests and measures finished products, components, or assemblies for functioning, operation, accuracy, or assembly to verify adherence to functional specifications. Collects samples for testing, and computes findings. Reads dials and meters to ensure that equipment is operating according to specifications.

Cleans and maintains test equipment and instruments to ensure proper functioning. Confers with vendors and others regarding inspection results, recommends corrective procedures, and compiles reports of results, recommendations, and needed repairs. Completes necessary procedures to satisfy licensing requirements, and indicates concurrence with acceptance or rejection decisions. Estimates and records operational data. Installs and positions new or replacement parts, components, and instruments. Analyzes and interprets sample data. Reads and interprets materials, such as work orders, inspection manuals, and blueprints, to determine inspection and test procedures. Discards or rejects products, materials, and equipment not meeting specifications. Marks items for acceptance or rejection, records test results and inspection data, and compares findings with specifications to ensure conformance to standards. Inspects materials, products, and work in progress for conformance to specifications, and adjusts process or assembly equipment to meet standards. Starts and operates finished products for testing or inspection.

**51-9061.03 Precision Devices Inspectors and Testers Mid – Senior level position assuming education and experience prerequisite**

Inspects materials, products, and work in progress for conformance to specifications, and adjusts process or assembly equipment to meet standards. Reads dials and meters to verify functioning of equipment according to specifications.

Cleans and maintains test equipment and instruments and certifies that precision instruments meet standards. Fabricates, installs, positions, or connects components, parts, finished products, or instruments for testing or operational purposes. Discards or rejects products, materials, and equipment not meeting specifications. Analyzes and interprets blueprints, sample data, and other materials to determine, change, or measure specifications or inspection and testing procedures. Completes necessary procedures to satisfy licensing requirements. Computes and/or calculates data and other information. Confers with vendors and others regarding inspection results and recommends corrective procedures. Disassembles defective parts and components. Estimates operational data to meet acceptable standards. Operates or tends machinery and equipment, and uses hand tools. Marks items for acceptance or rejection, records test results and inspection data, and compares findings with specifications to ensure conformance to standards.

Tests and measures finished products, components, or assemblies for functioning, operation, accuracy, or assembly to verify adherence to functional specifications.

**51-9061.04 Electrical and Electronic Inspectors and Testers Mid – Senior level position assuming education and experience prerequisite**

Tests and measures finished products, components, or assemblies for functioning, operation, accuracy, or assembly to verify adherence to functional specifications. Marks items for acceptance or rejection, records test results and inspection data, and compares findings with specifications to ensure conformance to standards. Reads dials and meters to verify functioning of equipment according to specifications. Inspects materials, products, and work in progress for conformance to specifications, and adjusts process or assembly equipment to meet standards. Analyzes and interprets blueprints, sample data, and other materials to determine, change, or measure specifications or inspection and testing procedures.



## **JOB TITLES AND ASSOCIATED TASKS** **Sorted by Cognofile**

Examines, and adjusts or repairs, finished products, and components or parts. Operates or tends machinery and equipment, and uses hand tools. Cleans and maintains test equipment and instruments to ensure proper functioning. Positions or directs other workers to position products, components, or parts, for testing. Writes and installs computer programs to control test equipment. Installs, positions, or connects new or replacement parts, components, and instruments. Reviews maintenance records to ensure that plant equipment functions properly. Disassembles defective parts and components. Confers with vendors and others regarding inspection results, recommends corrective procedures, and compiles reports of results, recommendations, and needed repairs. Computes and/or calculates sample data and test results.

### **51-9061.05 Production Inspectors, Testers, Graders, Sorters, Samplers, Weighers Mid – Senior level position assuming education and experience prerequisite**

Weighs materials, products, containers, or samples to verify packaging weight, to determine percentage of each ingredient, or to determine sorting. Examines product or monitors processing of product, using any or all of five senses, to determine defects or grade. Measures dimensions of product, using measuring instruments, such as rulers, calipers, gauges, or micrometers, to verify conformance to specifications. Tests samples, materials, or products, using test equipment, such as thermometer, voltmeter, moisture meter, or tensiometer, for conformance to specifications. Marks, affixes, or stamps product or container to identify defects, or denote grade or size information. Collects or selects samples for testing or for use as model. Notifies supervisor or specified personnel of deviations from specifications, machine malfunctions, or need for equipment maintenance. Uses or operates product to test functional performance. Sets controls, starts machine, and observes machine, which automatically sorts or inspects products.

Computes percentages or averages, using formulas and calculator, and prepares reports of inspection or test findings. Wraps and packages product for shipment or delivery. Transports inspected or tested products to other workstations, using hand truck or lift truck. Cleans, trims, makes adjustments, or repairs product or processing equipment to correct defects found during inspection. Counts number of product tested or inspected, and stacks or arranges for further processing, shipping, or packing. Reads work order to determine inspection criteria and to verify identification numbers and product type. Discards or routes defective products or contaminants for rework or reuse. Records inspection or test data, such as weight, temperature, grade, or moisture content, and number inspected or graded. Grades, classifies, and sorts products according to size, weight, color, or other specifications. Compares color, shape, texture, or grade of product or material with color chart, template, or sample, to verify conformance to standards.

### **51-9071.01 Jewelers Entry – Mid – Senior level position assuming education and experience prerequisite**

Cuts and shapes metal into jewelry pieces, using cutting and carving tools. Arranges jewelry pieces into specified design, softens metal by heating with gas torch, and shapes, using hammer and die. Solders pieces of jewelry together and enlarges or reduces size of rings, using soldering torch or iron. Repairs, reshapes, and restyles jewelry by replacing broken parts or using hand tools and machines. Ties or twists gold or silver wires together, and bends to form rings. Smooths soldered joints and rough spots, using hand file and emery paper, and polishes with polishing wheel or buffing wire. Immerses jewelry in cleaning solution or acid to remove stains, or in solution of gold or other metal to color jewelry. Forms model of article from wax or metal, using carving tools. Places model in casting ring, and pours plaster into ring to form mold. Forms sand or rubber mold from model for casting article. Pours molten metal into mold, or operates centrifugal casting machine, to cast article. Examines gemstone surfaces and internal structure to evaluate genuineness, quality, and value, using polariscope, refractometer, and other optical instruments. Immerses gemstones in chemical solutions to determine specific gravity and key properties for identification and appraisal. Grades stones for color, perfection, and quality of cut. Estimates wholesale and retail value of gemstones, following price guides and market fluctuations.

### **51-9071.02 Silversmiths Entry – Mid – Senior level position assuming education and experience prerequisite**

Anneals silverware, such as coffeepots, tea sets, and trays, in gas oven for prescribed time to soften metal for reworking. Solders parts together, and fills holes and cracks with silver solder, using gas torch. Hammers out deformations, selecting and using hammer and dollies with head corresponding in curvature with surface of article. Forms concavity in bottom of article to improve stability, using tracing punches and hammer. Shapes and straightens damaged or twisted articles by hand, or using pliers. Strikes article with small tools, or punches with hammer, to indent or restore embossing. Glues plastic separators to handles of coffee and teapots. Outlines design from photographs or drawings onto surface of article, using hand tools. Positions article over snarling tool and raises design area, using foot-powered hammer. Peens edges of scratches or holes to repair defect, using peening hammer. Wires parts, such as legs, spouts, and handles to body to prepare article for soldering. Pierces and cuts open design in ornamentation, using hand drill and scroll saw. Examines article to determine nature of defects, such as dents, uneven bottom, scratches, or holes, to repair. Verifies levelness of bottom edges of article, using straightedge, or by rocking back and forth on flat surface.

**51-9071.03 Model and Mold Makers, Jewelry Entry – Mid – Senior level position assuming education and experience prerequisite**

Carves, chisels, scrapes, and files plaster, wax or other plastic materials to make mold or model, according to design specifications. Fits, secures, and solders halves of molds together and drills holes in mold to attach handles and allow gases to escape during casting. Lays out design on metal stock and cuts along markings to fabricate pieces used to cast metal molds. Builds sand mold in flask, following pattern, and heats flask using furnace or torch to dry and harden mold. Cuts design in mold or other material to be used as model to fabricate metal and jewelry products. Constructs preliminary model of wax, metal, clay or plaster, forms sample casting in mold, and measures casting to verify dimensions. Mixes or melts clay, metal, plaster, wax or other material and pours material into mold to cast model or mold. Examines and measures metal parts for conformance to design specifications on scale drawing. Writes or modifies design specifications, such as content, weight, and material to be used to cast article. Presses model into clay and builds up clay around exposed parts of model to retain plaster. Removes mold from cast article, cleans mold, and applies shellac and dry powder to preserve mold for reuse. Polishes metal surfaces and products, using abrasive wheel. Modifies, sharpens, repairs or fabricates jigs, fixtures, and hand tools, such as scrapers, cutter, gougers, and shapers. Computes cost of labor and material to determine production cost of products and articles.

**51-9071.04 Bench Workers, Jewelry Entry – Mid – Senior level position assuming education and experience prerequisite**

Cuts, trims, shapes and smoothes jewelry stones, pearls, and metal pieces, using abrasives, grinding stone and power and hand tools. Weighs, mixes and melts metal alloys or material and pours molten material into mold to cast models of jewelry. Forms, joins, or assembles metal pieces, articles, or wire, using soldering iron, gas torch, and hand tools. Disassembles mold casting from metal or jewelry work piece and places work piece in water or on tray to cool. Marks and drills holes in jewelry mounting to center stones according to design specifications. Positions and aligns stones and metal pieces and sets, mounts and secures item in place, using setting and hand tools. Manually rotates mold to distribute molten material and prevent formation of air pockets in mold. Marks, engraves or embosses designs on metal pieces, such as castings, wire, or jewelry, following samples, sketches, or other specifications. Plates articles, such as jewelry pieces and clock and watch dials with silver, gold, nickel, or other metals. Examines assembled or finished product, using magnifying glass or precision measuring instruments, to ensure conformance to specifications. Repairs existing jewelry mountings to reposition jewels or adjust mounting. Sands inside mold pieces, using emery cloth and chalk dust. Assembles and secures mold sections used to cast metal articles and pieces. Brushes, buffs, cleans and polishes metal items and jewelry pieces, using jeweler's tools, polishing wheel, and chemical bath. Operates machines, such as centrifugal-casting, routing, and lathe, to fabricate casting molds, metal parts or wax models of products. Weighs completed pieces to determine deviation from specifications and records weight and processing time on production records. Designs and fabricates molds, models and machine accessories, and modifies hand tools used to cast metal and jewelry pieces. Researches and analyzes reference materials and consults with interested parties to develop new or modify existing products.

**51-9071.05 Pewter Casters and Finishers Entry – Mid – Senior level position assuming education and experience prerequisite**

Fills casting mold to form parts. Secures molded item in chuck of lathe, activates lathe, and finishes inner and outer surfaces of item. Rotates mold to distribute alloy in mold and to prevent formation of air pockets. Heats ingots or alloy mixture and skims off impurities. Weighs and mixes alloy ingredients. Engraves decorative lines on item, using engraving tool. Routes out location of part and solder path where part is joined to item, using routing machine. Positions and aligns auxiliary part in jig and joins parts, using solder and blowtorch. Sands inside of mold parts, applies glaze to inside surface of mold, and assembles mold. Strikes mold to separate dried casting from mold. Determines placement of auxiliary parts, such as handle and spout and marks locations of parts. Weighs completed item to determine deviation from specified weight and records weight. Designs, drafts, and fabricates models of new casting molds and chipping and turning tools used to finish surface of products. Carries castings or finished item to storage area or next workstation. Researches reference materials, analyzes production data, and consults with interested parties to develop ideas for new products.

**51-9071.06 Gem and Diamond Workers Entry – Mid – Senior level position assuming education and experience prerequisite**

Holds stone, gem, die, or stylus, attached to holder or lapidary stick, against rotating plates or wheels to shape, grind, and polish. Grinds, drills, and finishes jewel bearings for use in precision instruments, such as compasses and chronometers. Bores, laps, and polishes holes in industrial diamonds used for dies, using drill, lathe, lapping machine, and hand tools. Splits gem along pre-marked lines to remove imperfections, using blade and jeweler's hammer. Laps girdle on rough diamonds, using diamond-girdling lathe. Measures size of stone's bore holes and cuts to ensure adherence to



## JOB TITLES AND ASSOCIATED TASKS Sorted by Cognofile

specifications, using precision measuring instruments. Locates and marks drilling position on surface of diamond dies, using diamond chip and power hand drill. Lubricates, dismantles, and cleans lapping, boring, cutting, polishing, and shaping equipment and machinery. Replaces, trues, and sharpen blades, drills, and plates. Examines gem during processing to ensure accuracy of angle and position of cut or bore, using magnifying glass, loupe, or shadowgraph. Secures gem or diamond in holder, chuck, dop, lapidary stick, or block for cutting, polishing, grinding, drilling, or shaping. Examines diamond or gem to determine shape, cut, and width of stone. Selects shaping wheel, mixes, and applies abrasive, bort, or polishing compound. Positions gem or diamond against edge of revolving saw, lathe saw, or lapidary slitter to cut, block, or slit stone.

### **51-9081.00 Dental Laboratory Technicians Entry – Mid level position assuming education and experience prerequisite**

Fabricates dental appliances or apparatus, such as dentures, retainers, or metal bands. Reads prescription or specifications and examines models and impressions to determine design of dental products to be constructed. Rebuilds or replaces linings, wire sections, and missing teeth to repair dentures. Casts plastic, plaster, and metal framework and removes mold from frame. Melts metals or mixes plaster, porcelain, or acrylic paste, and pours material into molds or over framework to form dental apparatus or prosthesis. Applies investments or mixtures, such as porcelain paste or wax, over prosthesis framework or setup, using brushes and spatula. Shapes and solders wire and metal frames or bands for dental products, using soldering iron and hand tools. Tests appliance for conformance to specifications and accuracy of occlusion, using articulator and micrometer. Assembles, carves, grinds, and polishes metal and plastic appliances, using pliers, spatula, grinders, and polishes. Fills chipped or low spots in surface with acrylic resin. Removes excess mixture and investment and polishes surface of prosthesis or framework, using polishing machine.

### **51-9082.00 Medical Appliance Technicians Entry – Mid level position assuming education and experience prerequisite**

Carves, cuts, grinds, and welds wood, plastic, or metal material to fabricate medical supportive devices, using hand and power tools. Repairs and maintains medical supportive devices, such as artificial limbs, braces, and surgical supports, according to specifications. Lays out and marks dimensions of parts, using templates and precision measuring instruments. Bends, forms, and shapes fabric or material to conform to measurements for prescribed contours to fabricate structural components. Drills and taps holes for rivets, and glues, welds, bolts, and rivets parts together to form prosthetic or orthotic device. Polishes artificial limbs, braces, and supports, using grinding and buffing wheels. Mixes pigments according to formula to match skin coloring of patient and applies mixture to prosthetic or orthotic device. Reads specifications to determine type of product or device to be fabricated and selects required materials and tools. Constructs or receives plaster cast of patient's torso or limbs to use as pattern for cutting and fabricating supportive devices. Tests medical supportive device for body fit, alignment, movement, and biomechanical stability, using meters and alignment fixtures. Covers or pads metal or plastic structures and devices, using coverings such as rubber, leather, felt, plastic, or fiberglass. Fabricates wax or plastic impression of amputated area and prepares mold from impression to form artificial cosmetic ear, nose, or hand. Fits appliance onto patient and adjusts appliance as necessary. Instructs patient in use of prosthetic or orthotic device.

### **51-9083.01 Precision Lens Grinders and Polishers Entry – Mid – Senior level position assuming education and experience prerequisite**

Sets up machines to polish, bevel, edge, and grind lenses, flats, blanks, and other precision optical elements. Cleans and polishes finished lenses and eyeglasses using cloth, solvent, and equipment. Mounts and secures lens blanks or optical lens in holding tool or chuck of cutting, polishing, grinding, or coating machine. Holds lens against rotating wheel to grind or polish lens manually or using machine. Positions and adjusts cutting tool to specified curvature, dimensions, and depth of cut. Selects lens blank, molds, tools, or polishing or grinding wheel according to production specifications. Examines prescription, work order, or broken or used eyeglasses to determine specifications for lenses, contact lens, and other optical elements. Immerses eyeglass frames in solutions to harden, soften, or dye frames. Removes lenses from molds and separates lenses in containers for further processing or storage. Marks lenses and writes specifications to guide fabricators. Lays out lenses and traces lens outline on glass using template or assembles molds to cast contact lens. Inspects, weighs, and measures lens blanks or lens to verify compliance to specifications using precision instruments. Inspects lens blank to detect flaws, verify smoothness of surface and ensure thickness of coating on lens. Cuts or blocks lenses, optical glass, and blanks using cutting machinery or precision hand tools. Controls equipment to coat lenses to alter reflective quality of lens. Mounts, secures, and aligns lenses in frames or optical assemblies using precision hand tools. Assembles eyeglass frame, and attaches shields, nose pads, and temple pieces using pliers, screwdriver, and drill. Inspects and measures mounted or un-mounted lenses to verify alignment and conformance to specifications using precision measuring instruments. Adjusts lenses and frames to correct alignment and repairs broken parts using precision hand tools and soldering iron.



## JOB TITLES AND ASSOCIATED TASKS Sorted by Cognofile

### **51-9083.02 Optical Instrument Assemblers Entry – Mid level position assuming education and experience prerequisite**

Assembles structural, mechanical, and optical parts of instrument, using hand tools and cement. Mixes holding compounds, and mounts work piece or optical element on holding fixture and machine. Measures and marks dimensions and reference points, and lays out stock for machining. Studies work orders, blueprints, and sketches to formulate plans and sequences for fabricating optical elements, instruments, and systems. Computes distance of sighting instruments, using trigonometric formulas. Paints parts, using brush and spray gun. Records production, inspection, and test data in logs. Sets up and operates machines to fabricate fixtures, optics, and tools. Cleans elements and parts, using tissue, cleaning solution, and air compressor. Tests and sights instruments to verify compliance to specifications, using precision testing instruments. Measures and tests optics, using precision measuring and testing instruments. Grinds and polishes optics, using hand tools and polishing cloths. Coats optical elements according to specifications, using coating equipment.

### **51-9111.00 Packaging and Filling Machine Operators and Tenders Entry – Mid level position assuming education and experience prerequisite**

Tends or operates machine that packages product. Starts machine, by engaging controls. Stops or resets machine when malfunction occurs and clears machine jams. Regulates machine flow, speed, or temperature. Operates mechanism to cut filler product or packaging material. Adjusts machine tension and pressure and machine components according to size or processing angle of product. Removes finished packaged items from machine and separates rejected items. Observes machine operations to ensure quality and conformity of filled or packaged products to standards. Attaches identification labels to finished packaged items. Stacks finished packaged items or packs items in cartons or containers. Counts and records finished and rejected packaged items. Cleans, oils, and makes minor repairs to machinery and equipment. Secures finished packaged items by hand tying, sewing, or attaching fastener. Tests and evaluates product and verifies product weight or measurement to ensure quality standards. Stocks packaging material for machine processing. Stocks product for packaging or filling machine operation. Inspects and removes defective product and packaging material.

### **51-9121.01 Coating, Painting, and Spraying Machine Setters and Set-Up Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Sets-up and operates machines to paint or coat products with such materials as silver and copper solution, rubber, paint, glaze, oil, or rust proofing materials. Turns valves and adjusts controls to regulate speed of conveyor, temperature, air pressure and circulation, and flow or spray of coating or paint. Weighs or measures chemicals, coatings, or paints and adds to machine. Removes materials, parts, or work pieces from painting or coating machines, using hand tools. Measures thickness and quality of coating, using micrometer. Records operational data on specified forms. Cleans and maintains coating and painting machines, using hand tools. Examines and tests solutions, paints, products, and work pieces to ensure specifications are met. Operates auxiliary machines or equipment used on the coating or painting process. Starts pumps to mix solutions and to activate coating or painting machines. Selects and loads materials, parts, and work pieces on machine, using hand tools. Observes and adjusts loaded work piece or machine, according to specifications.

### **51-9121.02 Coating, Painting, and Spraying Machine Operators and Tenders Entry – Mid – Senior level position assuming education and experience prerequisite**

Observes machine operation and gauges to detect defects or deviations from standards. Threads or feeds item or product through or around machine rollers and dryers. Examines, measures, weighs, or tests sample product to ensure conformance to specifications. Places item or product on feed rack, spindle, or reel strand to coat, paint, or spray, using hands, hoist, or truck lift. Records production data. Cleans machine, equipment and work area, using water, solvents and other cleaning aids. Transfers completed item or product from machine to drying or storage area, using handcart, hand truck or crane. Aligns or fastens machine parts such as rollers, guides, brushes, and blades to secure roll, using hand tools. Starts and stops operation of machine, using lever or button. Fills hopper, reservoir, trough, or pan with material used to coat, paint, or spray, using conveyor or pail. Measures and mixes specified quantities of substances to create coatings, paints, or sprays. Attaches specified hose or nozzle to machine, using wrench and pliers. Turns dial, hand wheel, valve or switch to control and adjust temperature, speed, and flow of product or machine.

### **51-9122.00 Painters, Transportation Equipment Entry – Mid – Senior level position assuming education and experience prerequisite**

Pours paint into spray gun and sprays specified amount of primer, decorative, or finish coatings onto prepared surfaces. Paints areas inaccessible to spray gun or retouches painted surface, using brush. Paints designs, lettering, or other identifying information on vehicles, using paintbrush or paint sprayer. Selects paint according to company requirements





## **JOB TITLES AND ASSOCIATED TASKS** **Sorted by Cognofile**

and matches colors of paint following specified color charts. Regulates controls on portable ventilators and exhaust units to cure and dry paint or other coatings. Strips grease, dirt, paint, and rust from vehicle surface, using abrasives, solvents, brushes, blowtorch, or sandblaster. Removes accessories from vehicles, such as chrome or mirrors, and masks other surfaces with tape or paper. Sets up portable ventilators, exhaust units, ladders, and scaffolding. Operates lifting and moving devices to move equipment or materials to access areas to be painted. Lays out logos, symbols, or designs on painted surfaces, according to blueprint specifications, using measuring instruments, stencils, and patterns. Disassembles sprayer and power equipment, such as sandblaster, and cleans equipment and hand tools, using solvents, wire brushes, and cloths. Mixes, stirs and thins paint or other coatings, using spatula or power mixing equipment.

### **51-9123.00 Painting, Coating, and Decorating Workers Entry – Mid – Senior level position assuming education and experience prerequisite**

Applies coating, such as paint, ink, or lacquer, to protect or decorate work piece surface, using spray gun, pen, or brush. Reads job order and inspects work piece to determine work procedure and materials required. Rinses coated work piece to remove excess coating material or to facilitate setting of finish coat on work piece. Examines finished surface of work piece to verify conformance to specifications and retouches defective areas of surface. Drains or wipes work pieces to remove excess coating material or to facilitate setting of finish coat on work piece. Cleans and maintains tools and equipment, using solvent, brushes, and rags. Selects and mixes ingredients to prepare coating substance according to specifications, using paddle or mechanical mixer. Melts or heats coating material to specified temperature. Places coated work piece in oven or dryer for specified time to dry or harden finish. Cuts out sections in surface of material to be inlaid with decorative pieces, using pattern and knife or scissors. Cleans surface of work piece in preparation for coating, using cleaning fluid, solvent, brushes, scraper, steam, sandpaper, or cloth. Conceals blemishes in work piece, such as nicks and dents, using filler, such as putty. Positions and glues decorative pieces in cutout section, following pattern. Immerses work piece into coating material for specified time.

### **51-9131.01 Photographic Retouchers and Restorers Entry – Mid – Senior level position assuming education and experience prerequisite**

Applies paint to retouch or enhance negative or photograph using airbrush, pen, artist's brush, cotton swab, or gloved finger. Shades negative or photograph with pencil to smooth facial contours, conceal blemishes, stray hairs, or wrinkles, and soften highlights. Rubs eraser or cloth over photograph to reduce gloss, remove debris, or prepare specified areas of illustration for highlighting. Inks borders or lettering on illustration using pen, brush, or drafting instruments. Examines drawing, negative, or photographic print to determine coloring, shading, accenting, and changes required to retouch or restore. Mixes ink or paint solutions according to color specifications, color chart, and consistency desired. Cuts out masking template using shears and positions templates on picture to mask selected areas. Trims edges of print to enhance appearance using scissors or paper cutter. Wipes excess color from portrait to produce specified shade using cotton swab. Paints negative with retouching medium to ensure retouching pencil will mark surface of negative.

### **51-9131.02 Photographic Reproduction Technicians Entry – Mid – Senior level position assuming education and experience prerequisite**

Starts exposure to duplicate original, photograph, or negative. Estimates exposure time according to size of lens aperture, grade of sensitized paper, and intensity of light. Sets automatic timer, lens opening, and carriage of printer to specified focus and exposure time. Examines negative for contrast to determine grade of sensitized paper required for print. Measures material to be copied and computes percentage of enlargement or reproduction necessary using rule, chart, or percentage scale. Selects lens assembly according to size and type of negative or photograph to be printed. Mixes developing and processing solutions for use in developing, processing, and rinsing prints. Examines developed print for defects such as broken lines, spots, and blurs. Develops exposed paper or material. Rolls exposed section of sensitized paper into developer tank inside machine. Retouches defects in print using chemicals, inks, brushes, and pens. Rinses developed print in water and places in heated drying cabinet. Places sensitized paper in frame of projection printer, photostat, or other reproduction machine. Reads work order to determine required processes, techniques, materials, and equipment. Mounts camera on tripod or stand and load prescribed type and size film in camera. Mounts original photograph, negative, or other printed material in holder or vacuum frame beneath light. Reprints original to enlarge or in sections to be pieced together. Places filter over lens to make color separation when copying color work.

### **51-9131.03 Photographic Hand Developers Entry – Mid – Senior level position assuming education and experience prerequisite**

Immerses exposed film or photographic paper in developer solution to bring out latent image. Immerses negative paper, film, or print in stop bath to arrest developer action. Immerses negative paper, film, or print in water to remove chemicals.

Mixes developing and fixing solutions, following formula. Produces color photographs, negatives, and slides using color reproduction processes. Dries prints or negatives using sponge, squeegee, or mechanical air dryer. Immerses negative paper, film, or print in hypo-solution to fix image.

**51-9131.04 Film Laboratory Technicians Entry – Mid level position assuming education and experience prerequisite**

Computes amount of light intensity needed to compensate for density of film using standardized formulas. Exposes filmstrip to progressively timed lights to compare effects of various exposure times. Threads film strip through densitometer and exposes film to light to determine density of film. Records test data and routes film-to-film developer and film printer for further processing. Threads film strip through sensitometer and exposes film to light. Reads gauges on sensitometer to determine film's sensitivity to light.

**51-9132.00 Photographic Processing Machine Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Loads circuit boards, racks or rolls of film, negatives, or printing paper into processing or printing machines. Removes completed work from equipment and examines circuit boards, plates, film, and prints for conformance to quality standards. Places film in labeled containers or numbers film for identification, using numbering machine or by hand. Reads work orders and examines negatives and film to determine machine settings and processing requirements. Maintains records, such as number and types of processing completed, rate of materials usage, and customer charges. Cleans and maintains photo-processing equipment, using cleaning and rinsing solutions and ultrasonic equipment. Discards or cleans and repairs defective film or circuit patterns on photographic plates, using cleaning solutions and hand tools. Measures and mixes chemicals according to formula to prepare solutions for processing. Sets and adjusts machine controls, according to specifications, type of operation, and material requirements. Starts and operates machines to prepare circuit boards and expose, develop, etch, fix, wash, dry, and print film or plates. Monitors equipment operation to detect malfunctions. Fills tanks of processing machines with solutions, such as developer, dyes, stop-baths, fixers, bleaches, and washes.

**51-9141.00 Semiconductor Processors Entry – Mid – Senior level position assuming education and experience prerequisite**

Measures and weighs amounts of crystal growing materials, mixes and grinds materials, and loads materials into container, following procedures. Forms seed crystal for crystal growing or locates crystal axis of ingot, using x-ray equipment, drill, and sanding machine. Aligns photo mask pattern on photo-resist layer, exposes pattern to ultraviolet light, and develops pattern, using specialized equipment. Attaches ampoule to diffusion pump to remove air from ampoule, and seals ampoule, using blowtorch. Places semiconductor wafers in processing containers or equipment holders, using vacuum wand or tweezers. Monitors operation, and adjusts controls of processing machines and equipment, to produce compositions with specific electronic properties. Manipulates valves, switches, and buttons, or keys commands into control panels to start semiconductor processing cycles. Etches, laps, polishes, or grinds wafers or ingots, using etching, lapping, polishing, or grinding equipment. Operates saw to cut re-melt into sections of specified size or to cut ingots into wafers. Cleans and dries materials and equipment using solvent, etching or sandblasting equipment, and drying equipment to remove contaminants or photo-resist. Studies work order, instructions, formulas, and processing charts to determine specifications and sequence of operations. Loads and unloads equipment chambers and transports finished product to storage or to area for further processing. Inspects materials, components, or products for surface defects and measures circuitry, using electronic test equipment, precision measuring instruments, and standard procedures. Counts, sorts, and weighs processed items. Stamps or etches identifying information on finished component. Maintains processing, production, and inspection information and reports.

**51-9191.00 Cementing and Gluing Machine Operators and Tenders Entry – Mid – Senior level position assuming education and experience prerequisite**

Adjusts machine to apply specified amount of glue, cement, or adhesive. Reads work orders and communicates with coworkers to determine machine and equipment settings and adjustments, and supply and product specifications. Monitors and fills machine with glue, cement, or adhesive as needed. Transports materials, supplies, and finished products between storage and work areas, using forklift. Maintains production records, such as number, dimensions, and thickness of materials processed. Cleans and maintains gluing and cementing machines, using cleaning solutions, lubricants, brushes, and scrapers. Removes completed materials or products and restocks materials to be joined. Examines and measures completed materials or products to verify conformance to specifications, using measuring devices, such as tape measure, gauge, or calipers. Measures and mixes ingredients according to specifications to prepare glue. Mounts or loads material, such as paper, plastic, wood, or rubber in feeding mechanism of cementing or

gluing machine. Positions materials being joined to ensure accurate application of adhesive. Starts machine and turns valves or moves controls to feed, admit, or transfer materials and adhesive. Adjusts machine components according to specifications, such as width, length, and thickness of materials to be joined. Observes gauges, meters, and control panels to regulate temperature, pressure, or speed of feeder or conveyor. Monitors machine operation to detect malfunctions, remove jammed materials, and readjust machine components to conform to specifications.

**51-9194.01 Precision Etchers and Engravers, Hand or Machine Entry – Mid – Senior level position assuming education and experience prerequisite**

Engraves or cuts lettering, design, or characters in work piece surface using hand tools and engraving tool. Sketches, traces, or scribes layout lines and design on work piece, plates, dies, or rollers using compass, scribe, graver, or pencil. Determines machine settings and moves bars or levers to reproduce designs on rollers or plates. Operates machine to engrave design into steel rollers or plates. Trims precut designs or cuts around design to remove undesirable part using graver. Reviews sketches, diagrams, blueprints, or photographs to determine design to be cut or engraved. Measures and computes dimensions of lettering, designs, or patterns to be engraved. Prints proof or examines design to verify accuracy and reworks engraving as required. Sketches original design or pattern for use in printing or engraving. Transfers design from sleet or film to die or roller by decimal staining. Casts male die from engraved female die for use in seals. Positions and clamps work piece, plate, or roller in holding fixture. Scrapes plate or die to remove imperfections and smooth surface. Sharpens and forms cutting edge of gravers or cutter grinder. Polishes and oils surface of plate or die, or brushes with acid proof paint.

**51-9194.02 Engravers / Carvers Entry – Mid – Senior level position assuming education and experience prerequisite**

Holds work piece against outer edge of wheel and twists and turns work piece to grind glass according to marked design. Carves design on work piece using electric hand tool. Cuts outline of impression with graver and removes excess material with knife. Selects and mounts wheel and miter on lathe, and equips lathe with water to cool wheel and prevent dust. Prepares work piece to be engraved or carved such as glassware, rubber, or plastic product. Dresses and shapes cutting wheels by holding dressing stone against rotating wheel. Attaches engraved work piece to mount using cement. Suggests original designs to customer or management. Polishes engravings using felt and cork wheels. Traces, sketches, or presses design or facsimile signature on work piece by hand, or by using artist equipment.

**51-9194.03 Etchers Entry – Mid – Senior level position assuming education and experience prerequisite**

Immerses waxed ware in hydrofluoric acid to etch design on glass surface. Sandblasts exposed area of glass using spray gun to cut design in surface. Removes wax or tape using stylus or knife to expose glassware surface to be etched. Immerses ware in hot water to remove wax or peels off tape. Coats glass in molten wax or masks glassware with tape. Positions pattern against waxed or taped ware and sprays ink through pattern to transfer design to wax or tape.

**51-9194.04 Pantograph Engravers Entry – Mid – Senior level position assuming education and experience prerequisite**

Starts machine and guides stylus over template causing cutting tool to simultaneously duplicate design or letters on work piece. Positions and secures work piece such as nameplate, stamp, seal, badge, trophy, or bowling ball in holding fixture using measuring instruments. Inserts cutting tool or bit into machine and secures with wrench. Sets reduction scale to obtain required reproduction ratio on work piece. Sharpens cutting tools on cutter grinder. Examines engraving for quality of cut, burrs, rough spots, and irregular or incomplete engraving. Verifies conformance to specifications using micrometers and calipers. Brushes acid over designated engraving to darken or highlight inscription. Observes action of cutting tool through microscope and adjusts movement of stylus to ensure accurate reproduction. Selects and insets letter or design template beneath stylus attached to machine cutting tool or router according to work order. Adjusts depth and size of cut by adjusting height of worktable or adjusting gauge on machine arms. Sets stylus at beginning of pattern.

**51-9194.05 Etchers, Hand Entry – Mid – Senior level position assuming education and experience prerequisite**

Exposes work piece to acid to develop etch pattern such as designs, lettering, or figures. Prepares work piece for etching by cutting, sanding, cleaning, or treating with wax, acid resist, lime, etching powder, or light sensitive enamel. Fills etched characters with opaque paste to improve readability. Transfers image to work piece using contact printer, pantograph stylus, silkscreen printing device, or stamp pad. Measures and marks work piece such as plastic, fiberglass, epoxy board, metal or glass, using measuring and calibrating equipment. Inspects etched work for uniformity using calibrated microscope and gauge. Compares work piece design such as lettering, trademark, numerals, or lines to sample to verify development of pattern. Reduces artwork using reduction camera. Positions and secures work piece to be etched on setup board. Prepares etching solution according to formula. Neutralizes work piece to remove acid, wax, or enamel using water or solvents.

**51-9194.06 Engravers, Hand Entry – Mid – Senior level position assuming education and experience prerequisite**  
Cuts grooves of specified depth and uniformity into printing roller following lines of design impression. Presses sketch on copper printing roller to produce impression of design. Cuts strip of engraving gum-using knife. Refers to sketch to ensure that lines of only one printing color are engraved into each roller. Punches holes in plate to fasten plate to press using hand tools. Glues rubber or linoleum pattern to woodblock. Inspects designs for defective engraving and re-engraves to meet specifications. Prepares additional rubber plates for jobs requiring colors by omitting different portions of design or lettering on each plate. Traces pattern of design and letters in reverse on linoleum or two or three ply rubber using ruler, pencil, drawing instruments, or cutting tools. Cuts around drawn pattern leaving raised design or letters using cutting tools.

**51-9195.01 Precision Mold and Pattern Casters, except Non-ferrous Metals Entry – Mid – Senior level position assuming education and experience prerequisite**  
Pours, packs, spreads, or presses plaster, concrete, liquid plastic, or other materials into or around model or mold. Applies reinforcing strips and additional layers of materials to form pattern of model. Reviews specifications, blueprint, or sketch, to plan and lay out work. Applies lubricant or parting agent to mold or pattern. Constructs or assembles wooden mold using clamps and bolts, hand tools, and power tools. Locates and scribes parting line on patterns using measuring instruments such as calipers, square, and depth gauge. Positions and secures reinforcing structure or materials, flask, mold, model, or pattern. Combines or melts ingredients to attain specified viscosity and shape. Removes casting from mold after specified time using tools and equipment such as hand tools, power tools, and crane. Verifies dimensions using measuring instruments such as calipers, vernier gauge, and protractor. Mixes ingredients according to standard formula. Trims or removes excess material using scraper, knife, or band saw. Patches broken edges and fractures using clay or plaster and molders hand tools.

**51-9195.02 Precision Pattern and Die Casters, Non-ferrous Metals Entry – Mid – Senior level position assuming education and experience prerequisite**  
Shapes mold to specified contours with sand using trowel and related tools. Tilts melting pot or uses ladle to pour molten alloy, bronze, or other non-ferrous metal into sand mold. Preheats dies or patterns using blowtorch or other equipment, and applies parting compound. Lowers metal jig into molten metal in prescribed manner to attach anchor bolts to punch. Clamps metal and plywood strips around die or pattern to form mold. Operates foundry furnaces and ovens. Constructs wood patterns used to form sand molds for metal casts. Operates hoist to position dies or patterns on foundry floor. Machines metal patterns to exact dimensions.

**51-9195.03 Stone Cutters and Carvers Entry – Mid – Senior level position assuming education and experience prerequisite**  
Guides nozzle over stone following stencil outline or chips along marks to create design or work surface down to desired finish. Drills holes, or cuts molding and grooves in stone. Studies artistic objects or graphic materials, such as models, sketches, or blueprints and plans carving or cutting technique. Lays out designs or dimensions on stone surface, by freehand or transfer from tracing paper, using scribe or chalk and measuring instruments. Selects chisels, pneumatic or surfacing tools, or sandblasting nozzles and determines sequence of their use according to intricacy of design or figure. Removes or adds stencil during blasting to create differences in depth of cuts, intricate designs, or rough, pitted finish. Loads sandblasting equipment with abrasive, attaches nozzle to hose, and turns valves to admit compressed air and activate jet. Verifies depth and dimensions of cut or carving, using measuring instruments, to ensure adherence to specifications. Moves fingers over surface of carving to ensure smoothness of finish.

**51-9195.04 Glass Blowers, Molders, Benders, and Finishers Entry – Mid – Senior level position assuming education and experience prerequisite**  
Shapes, bends, or joins sections of glass, using paddles, pressing and flattening hand tools, or cork. Blows tubing into specified shape, using compressed air or own breath. Places glass into die or mold of press and controls press to form products, such as, glassware components or optical blanks. Dips end of blowpipe into molten glass to collect gob on pipe head or cuts gob from molten glass, using shears. Preheats or melts glass pieces or anneals or cools glass products and components, using ovens and refractory powder. Heats glass to pliable stage, using gas flame or oven. Cuts length of tubing to specified size, using file or cutting wheel. Inspects and measures product to verify conformance to specifications, using instruments, such as micrometers, calipers, magnifier, and ruler. Examines gob of molten glass for imperfections, utilizing knowledge of molten glass characteristics. Strikes neck of finished article to separate article from blowpipe. Determines type and quantity of glass required to fabricate product. Adjusts press stroke length and pressure, and regulates oven temperatures according to glass type processed. Develops sketch of glass product into blueprint specifications, applying knowledge of glass technology and glass blowing.



## JOB TITLES AND ASSOCIATED TASKS Sorted by Cognofile

### **51-9195.06 Mold Makers, Hand Entry – Mid – Senior level position assuming education and experience prerequisite**

Constructs molds used for casting metal, clay or plaster objects, using plaster, fiberglass, rubber, casting machine, patterns and flasks. Smooths surfaces of mold, using scraping tool and sandpaper. Bores holes or cuts grates and risers in mold, using power tools. Covers model or pattern of object from which mold is to be made with lubricant or parting agent to prevent mold from sticking to model. Melts metal pieces using torch and casts products, such as inlays and crowns, using centrifugal casting machine. Mixes modeling material, such as plaster powder and water, or mud, sand, and loam, to specified formula. Repairs cracks and broken edges of mold, using hand tools. Allows mold to harden or dry in oven and repeats process until mold is complete. Examines mold for accuracy. Separates model or pattern from mold. Removes excess modeling or mold material, such as plaster, wax, or rubber, using straightedge. Assembles hardened molds and seals joints. Places form around model and separately immerses each half portion of model in plaster, wax, or other mold making material. Covers portions of model with layers of modeling or casting material treated to harden when allowed to set or dry.

### **51-9196.00 Paper Goods Machine Setters, Operators, and Tenders Entry – Mid – Senior level position assuming education and experience prerequisite**

Adjusts guide assembly and folding mechanism according to specifications, using hand tools. Removes finished cores and stacks or places them on conveyor for transfer to other work areas. Examines completed work to detect defects and verify conformance to work orders. Cuts products to specified dimensions using hand or power cutters. Disassembles machines to repair or replace broken or worn parts using hand or power tools. Starts machine and regulates tension on pressure rolls, synchronizes speed of machine components and temperature of glue or paraffin. Places roll of paper or cardboard on machine feed track and threads paper through gluing, coating, and slitting rollers. Fills glue and paraffin reservoirs and loads automatic stapling mechanism. Observes operation of various machines to detect machine malfunctions and makes corrections for product to meet specifications. Installs attachments to machines for gluing, folding, printing, or cutting. Measures, spaces, and sets saw blades, cutters, and perforators, according to product specifications.

### **51-9198.02 Production Helpers Entry – Mid level position assuming education and experience prerequisite**

Cleans and lubricates equipment. Dumps materials into machine hopper prior to mixing. Loads and unloads processing equipment or conveyance used to receive raw materials or to ship finished products. Marks or tags identification on parts. Places or positions equipment or partially assembled product for further processing, manually, or using hoist. Removes product, machine attachments, and waste material from machine. Reads gauges and charts and records data. Signals coworkers to facilitate moving product, during processing. Measures amount of ingredients, length of extruded article, or work to ensure conformance to specifications. Replaces damaged or worn equipment parts. Tends equipment to facilitate process. Mixes ingredients, according to procedure. Turns valves to regulate flow of liquids or air, to reverse machine, to start pump, and to regulate equipment. Starts machines or equipment to begin process. Observes operation and notifies equipment operator of malfunctions.

### **53-3011.00 Ambulance Drivers and Attendants, Except Emergency Medical Technicians Entry – Mid – Senior level position assuming education and experience prerequisite**

Transports sick or injured person to hospital, or convalescents to destination, avoiding sudden motions detrimental to patients. Changes equipment to maintain sanitary conditions. Replaces supplies and disposable items on ambulance. Places patients on stretcher and loads stretcher into ambulance, usually with help of ambulance attendant. Administers first aid as needed. Reports facts concerning accident or emergency to hospital personnel or law enforcement officials.

### **53-3022.00 Bus Drivers, School Entry – Mid – Senior level position assuming education and experience prerequisite**

Drives bus to transport pupils over specified routes. Reports delays or accidents. Inspects bus and checks gas, oil, and water levels.

Makes minor repairs to bus. Regulates heating, lighting, and ventilating systems for passenger comfort. Complies with local traffic regulations.

Maintains order among pupils during trip.

### **53-3033.00 Truck Drivers, Light or Delivery Services Entry – Mid – Senior level position assuming education and experience prerequisite**

Drives truck, van or automobile with capacity under 3 tons to transport materials, products, or people. Loads and unloads truck, van, or automobile. Communicates with base or other vehicles using telephone or radio. Maintains records such as

vehicle log, record of cargo, or billing statements in accordance with regulations. Inspects and maintains vehicle equipment and supplies. Presents billing invoice and collects receipt or payment. Performs emergency roadside repairs.

**53-3041.00 Taxi Drivers and Chauffeurs Entry – Mid – Senior level position assuming education and experience prerequisite**

Drives taxicab, limousine, company car, hearse, or privately owned vehicle to transport passengers. Communicates with taxicab dispatcher by radio or telephone to receive requests for passenger service. Collects and documents fees, payments, and deposits determined by rental contracts or taximeter recordings. Assists passengers to enter and exit vehicle, assists with luggage, and holds umbrellas in wet weather. Maintains vehicle by performing such duties as regulating tire pressure and adding gasoline, oil, and water. Delivers automobiles to customers from rental agency, car dealership, or repair shop. Tests performance of vehicle accessories, such as lights, horn, and windshield wipers. Performs errands for customers, such as carrying mail to and from post office. Vacuums, sweeps, and cleans interior, and washes and polishes exterior of automobile. Makes minor repairs on vehicle, such as fixing punctures, cleaning spark plugs, or adjusting carburetor.

**53-4011.00 Locomotive Engineers Entry – Mid – Senior level position assuming education and experience prerequisite**

Interprets train orders, train signals, and railroad rules and regulations to drive locomotive, following safety regulations and time schedule. Inspects locomotive before run to verify specified fuel, sand, water, and other supplies. Inspects locomotive after run to detect damaged or defective equipment.

Synchronizes watch with that of conductor to ensure departure time from station or terminal is in accordance with time schedule. Prepares reports to explain accidents, unscheduled stops, or delays. Drives diesel-electric rail-detector car to transport rail-flaw-detecting machine over railroad.

Observes track to detect obstructions. Receives starting signal from conductor and moves controls, such as throttle and air brakes, to drive locomotive. Calls out train signals to assistant for verification of meaning to avoid errors in interpretation. Confers with conductor or traffic control center personnel via radiophone to issue or receive information concerning stops, delays, or oncoming trains.

**53-4012.00 Locomotive Firers Entry – Mid – Senior level position assuming education and experience prerequisite**

Observes oil, temperature, and pressure gauges on dashboard to ascertain if engine is operating safely and efficiently. Inspects locomotive to detect damaged or worn parts. Signals other worker to set brakes and to throw track switches when switching cars from train to way stations. Starts diesel engine to warm engine before run. Operates locomotive during emergency. Inventories supplies, such as fuel, water, and sand, to ensure safe, efficient operation during run. Observes track from left side of locomotive to detect obstructions on tracks. Observes train signals along route and verifies their meaning for engineer. Observes train as it goes around curves to detect dragging equipment and smoking journal boxes. Observes signal from workers in rear of train and relays information to engineer.

**53-4013.00 Rail Yard Engineers, Dinkey Operators, and Hostlers Entry – Mid – Senior level position assuming education and experience prerequisite**

Drives switching locomotive within railroad yard or other establishment to switch railroad cars. Inspects engine at start and end of shift, and refuels and lubricates engine as needed. Reads daily car schedule to determine number of cars needed for next day's run. Inspects track for defects, and assists in installation or repair of rails and ties. Records number of cars available or number of cars sent to repair station and type of service needed. Observes oil, air, and steam pressure gauges, and water level, to ensure operating efficiency. Operates switching diesel engine to switch railroad cars, using remote control. Operates and controls dinkey engine to transport and shunt cars at industrial or mine site. Operates flatcar equipped with derrick, or railcar to transport personnel or equipment. Receives switching orders from yard conductor, and talks with conductor and other workers via radio- telephone, to exchange switching information. Drives locomotives to and from various stations in roundhouse, to have locomotives cleaned, serviced, repaired, or supplied.

**53-4021.01 Train Crew Members Entry – Mid – Senior level position assuming education and experience prerequisite**

Inspects couplings, air hoses, journal boxes, and handbrakes to ensure that they are securely fastened and function properly. Climbs ladder to top of car to set brakes or to ride atop to control its speed when shunted. Makes minor repairs to couplings, air hoses, and journal boxes using hand tools.

Sets flares, flags, lanterns, or torpedoes in front and at rear of train during emergency stops to warn oncoming trains. Pulls or pushes track switch to reroute cars. Answers questions from passengers concerning train rules, station, and timetable information. Adjusts controls to regulate air-conditioning, heating, and lighting on train for comfort of passengers.

Places passengers' baggage in rack above seats on train. Assists passengers to board and leave train. Collects tickets, fares, and passes from passengers.

Observes signals from other crewmembers. Signals locomotive engineer to start or stop train when coupling or uncoupling cars. Reports to conductor any equipment requiring major repair.

**53-4021.02 Railroad Yard Workers Entry – Mid – Senior level position assuming education and experience prerequisite**

Throws track switches to route cars to different sections of yard. Rides atop cars that have been shunted and turns hand wheel to control speed or stop car at specified position. Connects air hose to car, using wrench. Attaches cable to cars being hoisted by cable or chain in mines, quarries or industrial plants. Opens and closes ventilation doors. Signals engineer to start and stop engine. Receives oral or written instructions indicating which cars are to be switched and track assignments. Raises lever to couple and uncouple cars for makeup and breakup of trains. Watches for and relays traffic signals to start and stop cars during shunting, using arm or lantern. Opens and closes chute gates to load and unload cars.

**53-5011.01 Able Seamen Entry – Mid – Senior level position assuming education and experience prerequisite**

Measures depth of water in shallow or unfamiliar waters, using lead line, and telephones or shouts information to bridge. Steers ship and maintains visual communication with other ships. Relays specified signals to ships in vicinity, using visual signaling devices, such as blinker light and semaphore. Stands by wheel when ship is on automatic pilot and verifies accuracy of course by comparing with magnetic compass. Gives directions to crew engaged in cleaning wheelhouse and quarterdeck. Maintains ship's log while in port, and stands gangway watch to prevent unauthorized persons from boarding ship. Stows or removes cargo from ship's hold. Steers ship under direction of ship's commander or navigating officer, or directs helmsman to steer, following designated course. Breaks out, rigs, overhauls, and stows cargo-handling gear, stationary rigging, and running gear. Paints and chips rust on deck or superstructure of ship. Overhauls lifeboats and lifeboat gear, and lowers or raises lifeboats with winch or falls. Stands watch from bow of ship or wing of bridge to look for obstruction in path of ship.

**53-5011.02 Ordinary Seamen and Marine Oilers Entry – Mid – Senior level position assuming education and experience prerequisite**

Cleans and polishes wood trim, brass, and other metal parts. Paints or varnishes decks, superstructures, lifeboats, or sides of ship. Lubricates machinery, equipment, and engine parts, such as gears, shafts, and bearings. Splices and repairs cables and ropes, using marlinespike, wire cutters, twine, and hand tools. Stands watch from bow of ship or wing of bridge to look for obstructions in path of ship. Loads or unloads materials from vessel. Lowers and mans lifeboat in case of emergency. Records data in ship's log such as weather conditions and distance traveled. Assists engineer in overhauling and adjusting machinery. Turns wheel while observing compass to maintain ship on course. Reads pressure and temperature gauges or displays, and records data in engineering log. Examines machinery for specified pressure and flow of lubricants. Handles lines to moor vessel to wharf, tie up vessel to another vessel, or rig towing lines. Sweeps and washes deck, using broom, mops, brushes, and hose. Chips and cleans rust spots on deck, superstructure, and sides of ship, using wire brush and hand or air chipping machine.

**53-5022.00 Motorboat Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Operates engine throttle and steering mechanism to guide boat on desired course. Secures boat to dock with mooring lines and casts off lines to depart. Gives directions for loading and seating in boat. Cleans and repairs boat hull and superstructure. Performs routine maintenance on boat engine and equipment. Maintains desired course, using compass or electronic navigational aides.

**53-5031.00 Ship Engineers Entry – Mid – Senior level position assuming education and experience prerequisite**

Orders crew to repair or replace defective parts of engines and other equipment. Inspects engines and other equipment. Stands engine-room watch, observing that lubricants and water levels are maintained in machinery and load on generators is within limits. Starts engines to propel ship and regulates engines and power transmission to control speed of ship. Maintains engineering log and bell book (orders of changes in speed and direction of ship). Repairs machinery, using hand tools and power tools.

**53-6031.00 Service Station Attendants Entry – Mid level position assuming education and experience prerequisite**

Fills or allows customer to fill fuel tank of vehicle with gasoline or diesel fuel to specified level. Installs accessories, such as air or oil filter, battery, windshield wiper blades, fan belt, or lights. Collects cash from customer and makes change, or

charges purchases to customer's credit card. Greases and lubricates vehicles or specified units, such as springs, universal joints, and steering knuckles, using grease gun or spray lubricant. Changes, tests, and repairs or replaces tires. Checks air pressure in tires, levels of fuel, motor oil, and other fluids, and adds air, oil, water, and required fluids. Adjusts brakes, replaces spark plugs, and makes other minor repairs. Cleans windshield or washes and waxes vehicle. Sells accessories and services, such as batteries, tires, lubrication services, and safety inspections. Assists in arranging merchandise displays and taking inventories. Prepares daily report of fuel, oil, and accessories sold in service station. Maintains customer records and follows up periodically with telephone, mail, or personal reminders of service due. Cleans parking area, offices, and equipment, and removes trash.

**53-6041.00 Traffic Technicians Entry – Mid level position assuming education and experience prerequisite**

Observes factors affecting traffic conditions, such as lighting, visibility of signs and pavement markings, traffic signals, and width of street. Computes mathematical factors for adjusting timing of traffic signals, speed restrictions, and related data, using standard formulas. Recommends changes in traffic control devices and regulations on basis of findings. Prepares drawings of proposed signal installations or other control devices, using drafting instruments. Draws graphs, charts, diagrams, and similar aids to illustrate observations and conclusions. Analyzes traffic volume and interviews motorists at intersections or areas where congestion exists or disproportionate number of accidents has occurred. Determines average speed of vehicles, using electrical timing devices or radar equipment. Times stoplight or other delays, using stopwatch. Conducts statistical studies of traffic conditions.

**53-6051.01 Aviation Inspectors Mid – Senior level position assuming education and experience prerequisite**

Inspects aircraft and components to identify damage or defects and to determine structural and mechanical airworthiness using hand tools and test instruments. Examines maintenance record and flight log to determine if service and maintenance checks and overhauls were performed at prescribed intervals. Examines access plates and doors for security. Starts aircraft and observes gauges, meters, and other instruments to detect evidence of malfunction. Conducts flight test program to test equipment, instruments, and systems under various conditions including adverse weather, using both manual and automatic controls. Recommends purchase, repair, or modification of equipment. Schedules and coordinates in-flight testing program with ground crews and air traffic control to assure ground tracking, equipment monitoring, and related services. Prepares reports to document flight activities. Approves or disapproves issuance of certificate of airworthiness. Investigates air accidents to determine cause. Analyzes training program and conducts examinations to assure competency of persons operating, installing, and repairing equipment.

**53-6051.02 Public Transportation Inspectors Mid – Senior level position assuming education and experience prerequisite**

Observes employees performing assigned duties to note their deportment, treatment of passengers, and adherence to company regulations and schedules. Observes and records time required to load and unload passengers or freight volume of traffic on vehicle and at stops. Investigates schedule delays, accidents, and complaints. Inspects company vehicles and other property for evidence of abuse, damage, and mechanical malfunction and directs repair. Determines need for changes in service, such as additional vehicles, route changes, and revised schedules to improve service and efficiency. Drives automobile along route to detect conditions hazardous to equipment and passengers and negotiates with local governments to eliminate hazards. Submits written reports to management with recommendations for improving service. Reports disruptions to service. Assists in dispatching equipment when necessary. Recommends promotions and disciplinary actions involving transportation personnel.

**53-6051.03 Marine Cargo Inspectors Mid – Senior level position assuming education and experience prerequisite**

Inspects loaded cargo in holds and cargo handling devices to determine compliance with regulations and need for maintenance. Reads vessel documents to ascertain cargo capabilities according to design and cargo regulations. Calculates gross and net tonnage, hold capacities, volume of stored fuel and water, cargo weight, and ship stability factors, using mathematical formulas. Determines type of license and safety equipment required, and computes applicable tolls and wharfage fees. Examines blueprints of ship and takes physical measurements to determine capacity and depth of vessel in water, using measuring instruments. Writes certificates of ad measurement, listing details, such as design, length, depth, and breadth of vessel, and method of propulsion. Issues certificate of compliance when violations are not detected or recommends remedial procedures to correct deficiencies. Times rolls of ship, using stopwatch. Analyzes data, formulates recommendations, and writes reports of findings. Advises crew in techniques of stowing dangerous and heavy cargo, according to knowledge of hazardous cargo.

**53-6051.04 Railroad Inspectors Mid – Senior level position assuming education and experience prerequisite**

Inspects signals and track wiring to determine continuity of electrical connections. Examines roadbed, switches, fishplates, rails, and ties to detect damage or wear. Examines locomotives and cars to detect damage or structural





## JOB TITLES AND ASSOCIATED TASKS Sorted by Cognofile

defects. Inspects and tests completed work. Operates switches to determine working conditions. Tests and synchronizes rail-flaw-detection machine, using circuit tester and hand tools, and reloads machine with paper and ink. Starts machine and signals worker to operate rail-detector car. Prepares reports on repairs made and equipment, railcars, or roadbed needing repairs.

Tags rail cars needing immediate repair. Fills paint container on rail-detector car used to mark section of defective rail with paint. Directs crews to repair or replace defective equipment or to re-ballast roadbed. Places lanterns or flags in front and rear of train to signal that inspection is being performed. Seals leaks found during inspection that can be sealed with caulking compound. Replaces defective brake rod pins and tightens safety appliances. Notifies train dispatcher of railcar to be moved to shop for repair. Makes minor repairs. Packs brake bearings with grease.

### **53-6051.05 Motor Vehicle Inspectors Mid – Senior level position assuming education and experience prerequisite**

Inspects truck accessories, airlines and electric circuits, and reports needed repairs. Examines vehicles for damage, and drives vehicle to detect malfunctions. Tests vehicle components for wear, damage, or improper adjustment, using mechanical or electrical devices. Applies inspection sticker to vehicles that pass inspection, and rejection sticker to vehicles that fail. Prepares report on each vehicle for follow-up action by owner or police. Prepares and keeps record of vehicles delivered. Positions trailer and drives car onto truck trailer. Notifies authorities of owners having illegal equipment installed on vehicle. Services vehicles with fuel and water.

### **53-6051.06 Freight Inspectors Mid – Senior level position assuming education and experience prerequisite**

Inspects shipment to ascertain that freight is securely braced and blocked. Observes loading of freight to ensure that crews comply with procedures. Monitors temperature and humidity of freight storage area. Records freight condition and handling, and notifies crews to reload freight or insert additional bracing or packing. Measures height and width of loads that will pass over bridges or through tunnels. Notifies workers of special treatment required for shipments. Prepares and submits report after trip. Posts warning signs on vehicles containing explosives or inflammatory or radioactive materials.

### **53-7011.00 Conveyor Operators and Tenders Entry – Mid – Senior level position assuming education and experience prerequisite**

Manipulates controls, levers, and valves to start pumps, auxiliary equipment, or conveyors and adjust equipment positions, speed, timing, and material flow. Distributes materials, supplies, and equipment to work stations, using lifts and trucks. Records production data, such as weight, type, quantity, and storage locations of materials, and documents equipment downtime. Affixes identifying information to materials or products, using hand tools. Collects samples of materials or products for laboratory analysis and ensure conformance to specifications. Weighs or measures materials and products, using scales or other measuring instruments, to verify specified tonnage and prevent overloads. Cleans, sterilizes, and maintains equipment, machinery, and work stations, using hand tools, shovels, brooms, chemicals, hoses, and lubricants. Repairs or replaces equipment components or parts such as blades, rolls, and pumps. Reads production and delivery schedules, and confers with supervisor to determine processing procedures. Loads, unloads, or adjusts materials or products on conveyors by hand or using lifts and hoists. Inspects equipment and machinery to prevent loss of materials or products during transit. Moves, assembles, and connects hoses or nozzles to material hoppers, storage tanks, conveyor sections or chutes, and pumps. Signals workers in other departments to move materials, products, or machinery, or notifies workstations of shipments en route and estimated delivery times. Stops equipment or machinery and clears jams, using poles, bars, and hand tools, or removes damaged materials from conveyors. Observes conveyor operations and monitors lights, dials, and gauges to maintain specified operating levels and detect equipment malfunctions.

### **53-7021.00 Crane and Tower Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Operates cranes, cherry pickers, or other moving equipment to lift and move loads, such as machinery or bulk materials. Inspects bundle packaging for conformance to customer requirements and removes and batches packaging tickets. Weighs bundles, using floor scale, and records weight for company records. Directs helpers engaged in placing blocking and out-rigging under crane when lifting loads. Inspects cables and grappling devices for wear, and installs or replaces cables. Directs truck drivers backing vehicles into loading bays and covers, uncovers, and secures loads for delivery. Reviews daily truck-delivery schedule to ascertain orders, sequence of deliveries, and special loading instructions. Cleans, lubricates, and maintains mechanisms, such as cables, pulleys, and grappling devices. Inspects and compares load weights with lifting capacity to ensure against overload. Loads and unloads bundles from trucks and moves containers to storage bins, using moving equipment. Inspects and adjusts crane mechanisms and accessory equipment to prevent malfunctions and wear.

### **53-7031.00 Dredge Operators Entry – Mid – Senior level position assuming education and experience prerequisite**



## JOB TITLES AND ASSOCIATED TASKS Sorted by Cognofile

Starts and stops engines to operate equipment. Lowers anchor pole to verify depth of excavation, using winch, or scans depth gauge to determine depth of excavation. Directs workers placing shore anchors and cables, laying additional pipes from dredge to shore, and pumping water from pontoons. Starts power winch that draws in or lets out cable to change position of dredge, or pulls in and lets out cable manually. Moves levers to position dredge for excavation, engage hydraulic pump, raise and lower suction boom, and control rotation of cutter head.

### **53-7032.01 Excavating and Loading Machine Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Operates power machinery, such as powered-shovel, stripping-shovel, scraper loader (mucking machine), or back-hoe (trench-excavating machine) to excavate and load material. Measures and verifies levels of rock or gravel, base, and other excavated material. Lubricates and repairs machinery and replaces parts, such as gears, bearings, and bucket teeth. Directs ground workers engaged in activities, such as moving stakes or markers. Receives written or oral instructions to move or excavate material. Observes hand signals, grade stakes, and other markings when operating machines.

### **53-7032.02 Dragline Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Moves controls to position boom, lower and drag bucket through material, and release material at unloading point. Drives machine to work site. Directs workers engaged in placing blocks and outriggers to prevent capsizing of machine when lifting heavy loads.

### **53-7033.00 Loading Machine Operators, Underground Mining Entry – Mid – Senior level position assuming education and experience prerequisite**

Operates levers to move conveyor boom or shovel to move mine contents into car or onto conveyor. Drives machine into pile of material blasted from working face. Pries off loose material from roof and moves it into path of machine with crowbar. Starts conveyor boom and gathering-arm motors. Moves trailing electrical cable clear of obstructions, using rubber safety gloves. Advances machine to gather material and convey it into car at rear. Stops gathering arms when car is full.

### **53-7041.00 Hoist and Winch Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Operates equipment, such as hoist, winch, or hydraulic boom, to lift and pull loads and materials. Repairs, maintains, and adjusts equipment, using hand tools. Moves or repositions hoists, winches, loads, and materials, manually or using equipment and machines such as trucks, cars, and hand trucks. Tends auxiliary equipment, such as jacks, slings, cables, or stop blocks, to facilitate moving items or materials for further processing. Attaches, fastens, and disconnects cables or lines to loads and materials, using hand tools. Climbs ladder to facilitate positioning and setup of vehicle-mounted derrick. Selects loads or materials according to weight and size specifications. Observes equipment gauges and indicators and hand signals to verify depth of materials, instruments, or position of load. Starts engine of hoist or winch to move loads or materials, using controls such as levers, pedals, and buttons.

### **53-7062.01 Stevedores, Except Equipment Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Carries or moves cargo by hand truck to wharf and stacks cargo on pallets to facilitate transfer to and from ship. Guides load being lifted to prevent swinging. Stacks cargo in transit shed or in hold of ship as directed. Attaches and moves slings used to lift cargo. Shores cargo in ship's hold to prevent shifting during voyage.

### **53-7062.02 Grips and Set-Up Workers, Motion Picture Sets, Studios, and Stages Entry – Mid – Senior level position assuming education and experience prerequisite**

Arranges equipment preparatory to sessions and performances following work order specifications and handles props during performances. Produces special lighting and sound effects during performances, using various machines and devices. Sews and repairs items using materials and hand tools such as canvas and sewing machines.

Orders equipment and maintains equipment storage areas. Connects electrical equipment to power source and tests equipment before performance. Reads work orders and follows oral instructions to determine specified material and equipment to be moved and its relocation. Erects canvas covers to protect equipment from weather. Adjusts controls to guide, position and move equipment, such as cranes, booms, and cameras.

Adjusts controls to raise and lower scenery and stage curtain during performance, following cues. Rigs and dismantles stage or set equipment such as, frames, scaffolding, platforms, or backdrops, using carpenter's hand tools.



## JOB TITLES AND ASSOCIATED TASKS Sorted by Cognofile

### **53-7064.00 Packers and Packagers, Hand Entry – Mid – Senior level position assuming education and experience prerequisite**

Fastens and wraps products and materials, using hand tools. Places or pours products or materials into containers, using hand tools and equipment. Marks and labels containers or products, using marking instruments. Loads materials and products into package processing equipment. Measures, weighs, and counts products and materials, using equipment. Tends packing machines and equipment that prepare and package materials and products. Cleans containers, materials, or work area, using cleaning solutions and hand tools. Removes and places completed or defective product or materials on moving equipment or specified area. Records product and packaging information on specified forms and records. Examines and inspects containers, materials, and products to ensure packaging process meets specifications. Obtains and sorts products, materials, and orders, using hand tools. Seals containers or materials, using glues, fasteners, and hand tools. Assembles and lines cartons, crates and containers, using hand tools.

### **53-7071.01 Gas Pumping Station Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Opens valve to allow gas to flow into and out of compressors. Cleans, lubricates, and adjusts compressors, using hand tools. Observes pressure gauges to determine consumption rate variations and turns knobs or switches to regulate pressures. Reads gas meters and records amount of gas received and dispensed from holders.

### **53-7071.02 Gas Compressor Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Moves controls and turns valves to start compressor engines, pumps, and auxiliary equipment. Operates equipment to control transmission of natural gas through pipelines. Observes operation of equipment to detect malfunctions. Conducts chemical tests to evaluate quality of gas. Performs minor repairs on equipment, using hand tools. Records instrument readings and operational changes in operating log. Operates or tends equipment to purify gases. Monitors meters, gauges, and recording instrument charts to ensure specified temperature, pressure, and flow of gas through system.

### **53-7072.00 Pump Operators, Except Wellhead Pumpers Entry – Mid – Senior level position assuming education and experience prerequisite**

Turns valves and starts pump to commence or regulate flow of substances, such as gases, liquids, slurries, or powdered materials. Connects hoses and pipes to pumps and vessels, using hand tools. Adds chemicals and solutions to tank to ensure specifications are met. Communicates with workers to start flow of materials or substance. Collects and delivers sample solutions for laboratory analysis. Transfers materials to and from vessels, using moving equipment. Tests materials and solutions, using testing equipment. Records information such as type and quantity of material, and operating data. Inspects and reports vessel and pump abnormalities such as leaks, pressure, and temperature fluctuations. Cleans and maintains pumps and vessels, using hand tools and equipment. Tends auxiliary equipment such as water treatment and refrigeration units and heat exchanges. Observes gauges and flow meter to ascertain specifications are met, such as tank level, chemical amounts, and pressure. Tends vessels that store substances such as gases, liquids, slurries, or powdered materials.

### **53-7073.00 Wellhead Pumpers Entry – Mid – Senior level position assuming education and experience prerequisite**

Starts compressor engines and diverts oil from storage tanks into compressor units and auxiliary equipment to recover natural gas from oil. Opens valves to return compressed gas to bottoms of specified wells to re-pressurize them and force oil to surface. Reads tank gauges and pump meters, and keeps production records. Starts pumps and opens valves to pump oil from wells into storage tanks. Operates engines and pumps from central power plant to shut off wells and to switch flow of oil into storage tanks.

### **53-7081.00 Refuse and Recyclable Material Collectors Entry – Mid – Senior level position assuming education and experience prerequisite**

Drives truck. Starts hoisting device that raises refuse bin attached to rear of truck and dumps contents into opening in enclosed truck body.

### **53-7111.00 Shuttle Car Operators Entry – Mid – Senior level position assuming education and experience prerequisite**

Positions shuttle car under discharge conveyor of loading machine and observes that materials are loaded according to specifications. Maneuvers shuttle car to keep its nose under discharge conveyor. Moves mine cars into position to be loaded from shuttle car.



## **JOB TITLES AND ASSOCIATED TASKS** **Sorted by Cognofile**

Drives loaded shuttle car to ramp and moves controls to discharge load into mine car or onto conveyor. Controls conveyor, which runs entire length of shuttle car to apportion load as loading progresses.

### **53-7121.00 Tank Car, Truck, and Ship Loaders Entry – Mid – Senior level position assuming education and experience prerequisite**

Starts pumps and adjusts valves to regulate flow of product to vessel, utilizing knowledge of loading procedures. Monitors product movement to and from storage tanks and coordinates with other workers to ensure constant product flow. Unloads cars by connecting hose to outlet plugs and pumping compressed air into car forcing liquid into storage tank. Verifies tank car, barge, or truckload number to ensure car placement accuracy based on written or verbal instructions. Weighs and inspects vessels to prevent contamination and to ensure cleanliness and compliance to loading procedures. Tests vessels for leaks, damage, and defects, and repairs or replaces defective parts. Reads meter to verify content, temperature, and volume of liquid load. Copies and tacks load specifications onto tank, and seals outlet valves on tank car, barge, or truck. Records operating data, such as products and quantities pumped, gauge readings, and operating time, manually or using computer. Retrieves liquid sample and performs tests on contents or delivers sample to laboratory for testing. Operates blenders and heaters to mix, blend and heat products.