



Code: 6681

Family: Construction, Maintenance, and Skilled Labor

Service: Operation and Construction

Group: Industrial Trades

Series: Metal Working Trades

CLASS TITLE: MACHINIST - APPRENTICE

The City of Chicago has partnered with the International Association of Machinists & Aerospace Workers, Local #126 to establish a four (4) year machinist apprentice training program that combines 800 hours of classroom training over four years with a four year total of 8,000 hours of paid on-the-job training (OJT) and work experience. **Positions are not paid by the City for the hours of classroom instruction.**

The training program is certified through the Department of Labor, Bureau of Apprenticeship and Training. At the completion of the apprentice training program and upon submission of all required documents by the City, successful candidates will receive a "CERTIFICATE OF COMPLETION OF APPRENTICESHIP" from the Department of Labor, Bureau of Apprenticeship and Training. This certificate grants journeyman status.

Apprentice positions are required to successfully complete required hours of classroom training provided by designated educational and training institutions. The Joint Apprenticeship and Training Committee overseeing the apprenticeship will certify the completion of class room instruction for each apprentice.

CHARACTERISTICS OF THE CLASS

Under the direct supervision of a Machinist with journeyman status, a Machinist Apprentice receives structured, supervised work experience, and is assigned tasks that will increase his/her knowledge and skills of the machinist trade.

Positions will receive on-the-job training (OJT) in machinist work from journeyman Machinists in one or more city departments including but not limited to the Departments of Transportation and the Department of Water Management.

ESSENTIAL DUTIES

Apprentice positions will be required to:

- Complete 800 hours of classroom instruction in a formal apprentice training program over a four (4) year period, or approximately 200 hours of class time per year
- Complete 8,000 hours of on-the-job training (OJT) over the four year period, or approximately 2,000 hours per year
- Learn how to review blue prints, specifications, or models of parts to be made and determine work procedures, metal stock and machine tools to use to fabricate parts
- Learn how to inspect and dismantle mechanical equipment and machinery to identify malfunction and determine needed repairs
- Learn how to fabricate metal parts by setting up and operating conventional or computer-controlled machine tools (e.g. lathes, milling machines, grinders, drill presses)
- Learn how to perform precision handwork to finish, fit and assemble machined parts using bench mounted and hand held power tools (e.g. die grinders, files, buffers, scrapers)
- Learn how to use precision measuring instruments (e.g. vernier calipers, micrometers, surface gauges, dial indicators) to maintain dimensional accuracy and specified tolerances during machining operations

- Learn how to determine and monitor the feed and speed of the machine during machining operations
- Learn how to check finished metal products to ensure they meet specifications
- Learn how to install and test new and repaired parts, ensuring proper fit and operation
- Learn how to weld or braze broken parts with electric or gas equipment
- Learn how to cut steel with acetylene torch
- Under the guidance and direction of a Machinist with journeyman status; assist in performing duties including but not limited to:

Department of Transportation

1. **Assigned to repair crews on Bascule Bridges:** inspects machinery, metal parts and equipment on bridges, checking parts such as pins, trunnions, gear trains, and bearings/ bearing caps for damage or wear and tear, and what equipment or parts need replacement; greases and lubricates bearings, shafts and other machinery parts; and ensures moveable metal parts are in proper working condition.
2. Removes and replaces parts on bridges (e.g. heel locks), using equipment such as torches, sawzall and hand tools up to one inch to burn out/ remove the part; uses chokers and straps to rig and pull out part for placement on trucks; installs parts, lowering into place using come-alongs and chain falls to put in place on bridge; use wrenches to bolt in place
3. **Assigned to machine shop:** repairs and rebuilds equipment and machine parts such as center locks, thrusters, bolts and bearings; machines to rebuild and finish parts and fabricates new parts; uses milling machines to cut and size part to correct size with a machine surface finish; uses lathes to fabricate needed parts
4. **Assigned to equipment shop:** repairs and rebuilds small equipment and associated parts such as generators, power saws, pressure washers and parts on vehicles; machines to rebuild and finish parts and fabricates new parts; uses milling machines to cut and size part to correct size with a machine surface finish; uses lathes to fabricate needed parts

Department of Water Management

1. **Assigned to machine shop – Water Pumping:** fabricates parts to repair water pumps, ranging in size from 10mgd to 120 mgd (million gallons daily), operated by steam or electric engines; uses tools to rig and remove lids from large pumps; inspects pump machinery and gears such as bearings, wear rings, case rings, and packing sleeves for damage or wear and tear. Removes and installs parts using hand tools such as micrometers; uses lathes, milling machines, drilling press to fabricate needed parts; inspects and fabricates parts for related equipment including cooling pumps and 16 cylinder diesel engines
2. **Assigned to machine shop – Filtration Plants:** inspect pumps, electric motors, gears, drive shafts and other equipment for damage or wear and tear; uses hand tools and welding equipment to disassemble or reassemble equipment to remove and replace parts such as bearings and gears; greases parts and equipment and puts back in service. Uses lathes, milling machines, drill presses, and grinders to fabricate parts for pumps made of stainless steel, cast iron or bronze; sets up machines, chooses appropriate tool bits, and makes correct cuts to machine parts.

MINIMUM QUALIFICATIONS

Education, Training and Experience

- Must have a High School Diploma OR GED certificate
- Must be at least 18 years of age at the time of application
- Successful candidates must pass a drug screen, background investigation and required pre-employment exams including a mechanical aptitude test prior to employment

Licensure, Certification, or other Qualifications

- A valid State of Illinois driver's license is required

WORKING CONDITIONS

- Exposure to outdoor weather conditions in performance of duties
- Exposure to loud noise, fumes or dust, oily or wet environment
- Exposure to hazardous conditions (e.g., heavy machinery)

EQUIPMENT

- Hand and power tools (e.g. die grinders, buffers, lathe, milling machine, micrometers, drills)
- Standard tools and equipment of the machinist trade (e.g., machine tools, precision instruments)
- Personal protective equipment (e.g., hard hat, shoes, glasses, gloves, vest, pads)

PHYSICAL REQUIREMENTS

- Heavy lifting (up to 75 pounds) is required
- Ability to stand and walk for extended or continuous periods of time
- Ability to quickly bend, stretch, twist, or reach out with one's body, arms, and/or legs
- Ability to operate applicable hand tools, power tools, and equipment

KNOWLEDGE, SKILLS, ABILITIES, AND OTHER WORK REQUIREMENTS

At the completion of apprenticeship, knowledge of:

- mechanics, mathematics, metal properties, layout and machining procedures
- equipment, materials and machine tools specific to the machinist trade
- repair and maintenance methods, practices and procedures applicable to the machinist trade
- use of safety equipment and protective gear
- applicable safety and code standards specific to the machine trade
- programming and electronics used in the operation of computer-controlled tools

Knowledge of applicable City and department policies, procedures, rules and regulations

Skills

- ACTIVE LISTENING - Give full attention to what other people are saying, take time to understand the points being made, ask questions as appropriate, and not interrupt at inappropriate times
- MATHEMATICS - Use mathematics to solve problems

- EQUIPMENT MAINTENANCE - Perform routine maintenance on equipment and determine when and what kind of maintenance is needed
- EQUIPMENT SELECTION - Determine the kind of tools and equipment needed to do a job
- OPERATION AND CONTROL - Control operations of equipment or systems
- INSTALLATION - Install equipment, machines, wiring, or programs to meet specifications
- REPAIRING - Repair machines or systems using the needed tools

Abilities

- COMPREHEND ORAL INFORMATION - Listen to and understand information and ideas presented through spoken words and sentences
- SPEAK - Communicate information and ideas in speaking so others will understand
- COMPREHEND WRITTEN INFORMATION - Read and understand information and ideas presented in writing
- RECOGNIZE PROBLEMS - Tell when something is wrong or is likely to go wrong
- REASON TO SOLVE PROBLEMS - Apply general rules to specific problems to produce answers that make sense
- VISUALIZE - Imagine how something will look after it is moved around or when its parts are moved or rearranged

Other Work Requirements

- INITIATIVE - Demonstrate willingness to take on job challenges
- STAMINA - Demonstrate energy and stamina to accomplish work tasks
- DEPENDABILITY - Demonstrate reliability, responsibility, and dependability and fulfill obligations
- ATTENTION TO DETAIL - Pay careful attention to detail and thoroughness in completing work tasks

All employees of the City of Chicago must demonstrate commitment to and compliance with applicable state and federal laws, and City ordinances and rules; the City's Ethics standards; and other City policies and procedures.

The City of Chicago will consider equivalent foreign degrees, accreditations, and credentials in evaluating qualifications.

* May be required at entry.

City of Chicago
Department of Human Resources

December, 2012