

Program Number 50-423-1
4-Year Contract
Work Hours (including related instruction): 8320
Related Instruction Hours: 576 • Night School Hours: 8
ABOUT APPRENTICESHIP

Apprenticeships are employer-sponsored training programs. You must have a contract before being invited to school. A special application process is used for these programs. Please contact the Apprenticeship Office for the proper forms. Apprenticeship means you earn while you learn. If you want a career in a skilled trade, apprenticeship is the best way to get there. You'll combine on-the-job training with on-campus learning—you'll have the best of both worlds when it comes to learning the skills you need to get ahead. And even better, you'll earn a paycheck while you learn those skills.

ABOUT THE CAREER

Maintenance mechanics and millwrights install, dismantle, or move machinery and heavy equipment according to layout plans, blueprints, or other drawings. They keep machines, mechanical equipment, or the structure of an establishment in repair. Duties may involve pipe fitting; boiler making; insulating; welding; machining; carpentry; repairing electrical or mechanical equipment; installing, aligning, and balancing new equipment; and repairing buildings, floors, or stairs. This program provides the related instruction portion for this trade's apprenticeship.

CAREERS

Graduates of Lakeshore's Maintenance Mechanic/Millwright Apprenticeship program work as journey-level maintenance mechanics/millwrights in a variety of industrial and organizational settings.

INDUSTRIAL APPRENTICE APPLICATION REQUIREMENTS

- Determined by employer
- Wisconsin Apprentice Contract

PROGRAM OUTCOMES

- Demonstrate proper rigging techniques.
- Select an appropriate power transmission system for a given application.
- Identify suitable pumps for given applications.
- Recommend bearings for given applications.
- Plan for fabricating parts and assemblies according to specifications.
- Apply operational and troubleshooting principles to fluid power systems.
- Lay out an equipment installation plan.
- Plan maintenance schedules for a given system.

APPROXIMATE COSTS

Contact the Lakeshore Apprenticeship Office or visit www.gotoltc.edu/apprenticeship for detailed information.

SPECIAL NOTE

You must have a sponsoring employer and contract before attending school.

CAREER & EDUCATION ADVANCEMENT OPPORTUNITIES

Lakeshore credits transfer to over 30 universities. For more information visit gotoltc.edu/future-students/transfer.

Catalog No.	Class Title	Credit(s)
Term 1		
50423710	Math for MMMP	1
50423713	Precision Measurements for MMMP	0.5
50423717	Electricity for MMMP	0.5
2		
Term 2		
50423711	Print Reading for MMMP	1
50423740	Mechanical Fastening and Safety for MMMP	1
2		
Term 3		
50423741	Equipment Installation for MMMP	1
50423714	Rigging for MMMP	1
2		
Term 4		
50423738	Sheet Metal and Structural Steel for MMMP	0.75
50423716	Metallurgy for MMMP	0.5
50423715	Welding for MMMP	0.75
2		
Term 5		
50423742	Power Transmission Principles for MMMP	0.5
50423743	Power Transmission Drives for MMMP	1.5
2		
Term 6		
50423731	Couplings and Alignment for MMMP	0.5
50423744	Bearings and Lubrication for MMMP	1
50423724	Preventative and Predictive Maintenance for MMMP	0.5
2		
Term 7		
50423720	Pipefitting and Valves for MMMP	0.75
50423722	Packings, Seals, and Gaskets for MMMP	0.5
50423732	Pumps for MMMP	0.75
2		
Term 8		
50423721	Hydraulic Systems for MMMP	1
50423745	Pneumatic Systems for MMMP	1
2		
		TOTAL 16

Curriculum and program acceptance requirements are subject to change. Program start dates vary; check with the Apprenticeship Office for details. The tuition and fees are approximate based on 2023-2024 rates and are subject to change prior to the start of the academic year.

BEARINGS AND LUBRICATION FOR MMMP...examines bearing types and applications, and compares various equipment bearings. Apprentices will develop skills related to bearing inspection, selection, removal, mounting, and diagnosing bearing failures. Apprentices will also examine the types, principles, and applications of bearing and machine lubricants and lubricating systems. PREREQUISITES: 504423170 Math for MMMP, 50423713 Precision Measure MMMP, 50423717 Electricity MMMP, 50423711 Print Read MMMP and (50423740 Mechanical Fastening & Safety MMMP or 50423712 Fasteners MMMP Trades and 50423723 Adhesives & Sealants MMMP Trades)

COUPLINGS AND ALIGNMENT FOR MMMP...compares different coupling types and examines common misalignment problems. Apprentices will develop skills related to inspecting, troubleshooting, lubricating, and preparing couplings for removal and installation by using dial indicators and laser aligners. This course will also discuss types and principles of clutches and brakes. PREREQUISITES: 504423170 Math for MMMP, 50423713 Precision Measure MMMP, 50423717 Electricity MMMP, 50423711 Print Read MMMP and (50423740 Mechanical Fastening & Safety MMMP or 50423712 Fasteners MMMP Trades and 50423723 Adhesives & Sealants MMMP Trades)

ELECTRICITY FOR MMMP...examines basic electrical terms and theory. Apprentices will learn motor wiring, multimeter use as well as lockout tagout as it applies to electricity. CONDITION: 504231 Millwright Apprentice or 504641 Maintenance Technician Apprentice requirements met

EQUIPMENT INSTALLATION FOR MMMP...provides knowledge regarding common practice procedures for the layout of equipment installations, planning for moving equipment, and methods for setting and leveling equipment. This class will also examine the principles of concrete as well as anchoring of equipment in concrete. PREREQUISITES: 504423170 Math for MMMP, 50423713 Precision Measure MMMP, 50423717 Electricity MMMP, 50423711 Print Read MMMP and (50423740 Mechanical Fastening & Safety MMMP or 50423712 Fasteners MMMP Trades and 50423723 Adhesives & Sealants MMMP Trades)

HYDRAULIC SYSTEMS FOR MMMP...provides instruction to apprentices concerning many aspects of inspecting, servicing, and troubleshooting hydraulic systems and components. Apprentices will learn safety related issues and be taught proper safety procedures for working with hydraulic systems and components. PREREQUISITES: 504423170 Math for MMMP, 50423713 Precision Measure MMMP, 50423717 Electricity MMMP, 50423711 Print Read MMMP and (50423740 Mechanical Fastening & Safety MMMP or 50423712 Fasteners MMMP Trades and 50423723 Adhesives & Sealants MMMP Trades)

MATH FOR MMMP...examines math concepts as they relate to millwrights and machine maintenance. Apprentices will develop skills related to converting fractions to decimals; using both standard and metric systems; applying basic algebra to solving problems; computing area, volume, mass, and torque; using trigonometry; and using math charts, tables and references in support of common work processes. CONDITION: 504231 Millwright Apprentice or 504641 Maintenance Technician Apprentice requirements met

MECHANICAL FASTENING AND SAFETY FOR MMMP...examines safety as it relates to hand and power tools and explores the theory and application of torque in the MMMP Trades. Apprentices will compare fasteners and their uses, analyze fastener failures, and install various mechanical fasteners. In addition, apprentices will compare adhesives and sealant types and applications, develop skills related to applying them in repair applications, interpreting SDS information, and handling hazardous materials. CONDITION: 504231 Millwright Apprentice or 504641 Maintenance Technician Apprentice requirements met

METALLURGY FOR MMMP...develops apprentice skills regarding metallurgical concepts. Apprentices will compare various metals and their applications, apply metallurgical techniques to work processes, test metals for hardness, and examine heat treating applications. PREREQUISITES: 504423170 Math for MMMP, 50423713 Precision Measure MMMP, 50423717 Electricity MMMP, 50423711 Print Read MMMP and (50423740 Mechanical Fastening & Safety MMMP or 50423712 Fasteners MMMP Trades and 50423723 Adhesives & Sealants MMMP Trades)

PACKINGS, SEALS, AND GASKETS FOR MMMP...will examine packings, seals, and gaskets and compare materials and applications. The skills in layout, cutting, inspecting, removing, and installing these components will be developed. PREREQUISITES: 504423170 Math for MMMP, 50423713 Precision Measure MMMP, 50423717 Electricity MMMP, 50423711 Print Read MMMP and (50423740 Mechanical Fastening & Safety MMMP or 50423712 Fasteners MMMP Trades and 50423723 Adhesives & Sealants MMMP Trades)

PIPEFITTING AND VALVES FOR MMMP...introduces apprentices to principles, application and types of pipe, materials, fittings, tubing, and valves, and develops skills related to layout, installation, and maintenance. PREREQUISITES: 504423170 Math for MMMP, 50423713 Precision Measure MMMP, 50423717 Electricity MMMP, 50423711 Print Read MMMP and (50423740 Mechanical Fastening & Safety MMMP or 50423712 Fasteners MMMP Trades and 50423723 Adhesives & Sealants MMMP Trades)

PNEUMATIC SYSTEMS FOR MMMP...provides instruction to apprentices concerning many aspects of inspecting, servicing, and troubleshooting pneumatic systems and components. Concepts of compressed air systems and vacuum systems will also be evaluated. Apprentices will learn safety related issues and be taught proper safety procedures for working with pneumatic systems and components and examine preventive maintenance techniques commonly used on the job. PREREQS: 504423170 Math for MMMP, 50423713 Precision Measure MMMP, 50423717 Electricity MMMP, 50423711 Print Read MMMP and (50423740 Mechanical Fastening & Safety MMMP or 50423712 Fasteners MMMP Trades and 50423723 Adhesives & Sealants MMMP Trades)

POWER TRANSMISSION DRIVES FOR MMMP...examines drive transmission systems and applications, including gear drives, chain drives, belt drives, and conveyor systems. Apprentices will compare different types of gear drive systems and components, chain drive systems and components, belt drive systems and components, as well as different types of conveyors and their related components. Apprentices will develop skills necessary for inspecting, troubleshooting, removing, selecting, and installing components used in the various mechanical drive transmission systems. PREREQS: 504423170 Math for MMMP, 50423713 Precision Measure MMMP, 50423717 Electricity MMMP, 50423711 Print Read MMMP and (50423740 Mechanical Fastening & Safety MMMP or 50423712 Fasteners MMMP Trades and 50423723 Adhesives & Sealants MMMP Trades)

POWER TRANSMISSION PRINCIPLES FOR MMMP...examines the physics and principles of simple machines and how those principles are used in the development of the skills necessary for inspecting mechanical power transmission systems and troubleshooting mechanical drive systems. PREREQUISITES: 504423170 Math for MMMP, 50423713 Precision Measure MMMP, 50423717 Electricity MMMP, 50423711 Print Read MMMP and (50423740 Mechanical Fastening & Safety MMMP or 50423712 Fasteners MMMP Trades and 50423723 Adhesives & Sealants MMMP Trades)

PRECISION MEASUREMENTS FOR MMMP...develops apprentice skills in precision measurement. Types of measuring instruments will be compared and then measuring skills using tapes, steel rules, micrometers, calipers, indicators, and gauges will be developed. CONDITION: 504231 Millwright Appr or 504641 Maint Tech Appr reqs met

PREVENTIVE AND PREDICTIVE MAINTENANCE FOR MMMP...examines both preventive and predictive maintenance concepts as they apply to millwright work processes and machine maintenance including vibration and lubrication analysis. Apprentices will develop skills related to assessing machine conditions and faults based on both preventative and predictive maintenance. PREREQS: 504423170 Math for MMMP, 50423713 Precision Measure MMMP, 50423717 Electricity MMMP, 50423711 Print Read MMMP and (50423740 Mechanical Fastening & Safety MMMP or 50423712 Fasteners MMMP Trades and 50423723 Adhesives & Sealants MMMP Trades)

PRINT READING FOR MMMP...explores reading prints commonly used by millwrights and machine maintenance workers. Course competencies include comparing types of prints, interpreting structural drawings, identifying parts from prints, and developing apprentice sketching drawing skills. CONDITION: 504231 Millwright Apprentice or 504641 Maintenance Technician Apprentice requirements met

PUMPS FOR MMMP...compares different pump types including centrifugal, diaphragm, gear, vane and their applications. Apprentices will complete a field inspection of pumps and learn how to troubleshoot, remove, overhaul, and install and perform preventative maintenance on pumps. PREREQUISITES: 504423170 Math for MMMP, 50423713 Precision Measure MMMP, 50423717 Electricity MMMP, 50423711 Print Read MMMP and (50423740 Mechanical Fastening & Safety MMMP or 50423712 Fasteners MMMP Trades and 50423723 Adhesives & Sealants MMMP Trades)

RIGGING FOR MMMP...will compare types of rigging equipment and their uses; determine safe loads, rig & crib loads, and move a load with cranes and hoists, including signaling. Will also cover usage and the safety of ladders and scaffolding. PREREQS: 504423170 Math for MMMP, 50423713 Precision Meas MMMP, 50423717 Electricity MMMP, 50423711 Print Read MMMP and (50423740 Mech Fastening & Safety MMMP or 50423712 Fasteners MMMP Trades and 50423723 Adhesives & Sealants MMMP Trades)

SHEET METAL AND STRUCTURAL STEEL FOR MMMP...compares types of sheet metal and tools used by the trade. Apprentices will develop skills related to fabricating sheet metal and structural steel, including layout, bending and forming, as well as erecting structural steel. PREREQUISITES: 504423170 Math for MMMP, 50423713 Precision Measure MMMP, 50423717 Electricity MMMP, 50423711 Print Read MMMP and (50423740 Mechanical Fastening & Safety MMMP or 50423712 Fasteners MMMP Trades and 50423723 Adhesives & Sealants MMMP Trades)

WELDING FOR MMMP...compares common welding processes and develops apprentice skills related to welding, cutting, heating and using oxy-gas. Welding with arc, MIG and TIG is included, along with common cutting and joining techniques. PREREQUISITES: 504423170 Math for MMMP, 50423713 Precision Measure MMMP, 50423717 Electricity MMMP, 50423711 Print Read MMMP and (50423740 Mechanical Fastening & Safety MMMP or 50423712 Fasteners MMMP Trades and 50423723 Adhesives & Sealants MMMP Trades)