

INDUSTRIAL MAINTENANCE TECHNOLOGY

The **Industrial Maintenance Technician** program prepares students with the education and experience necessary to begin employment within the Potash mining industry. Students receive training on state-of-the-art equipment which simulates the actual work performed both above and below ground in the potash mines. Additional exposure to the industry is provided through field experiences. Specializations offered within the curriculum include electrical and mechanical options.

Graduation Requirements

Certificate in Industrial Maintenance Technician: A cumulative GPA of 2.0 or higher. A minimum of 9 credits earned toward the certificate must be completed at SENMC.

AAS in Industrial Maintenance Technician: ENGL 1110G Composition I with a C- or higher; placement into college-level math and reading courses or completion of developmental courses with a C- or higher; cumulative GPA of 2.0 or higher. A minimum of 15 of the 60 credits for the associate's degree must be completed at SENMC.

- Industrial Maintenance Technician Electrical - Associate of Applied Science (<https://senmc-public.courseleaf.com/academic-programs/associate-degree-certificate-programs/industrial-maintenance-technology/industrial-maintenance-technician-electrical-aas/>)
- Industrial Maintenance Technician Mechanical - Associate of Applied Science (<https://senmc-public.courseleaf.com/academic-programs/associate-degree-certificate-programs/industrial-maintenance-technology/industrial-maintenance-technician-mechanical-aas/>)
- Industrial Maintenance Technology Electrical - Certificate (<https://senmc-public.courseleaf.com/academic-programs/associate-degree-certificate-programs/industrial-maintenance-technology/industrial-maintenance-technology-electrical-certificate/>)
- Industrial Maintenance Technology Mechanical - Certificate (<https://senmc-public.courseleaf.com/academic-programs/associate-degree-certificate-programs/industrial-maintenance-technology/industrial-maintenance-technology-mechanical-certificate/>)

INMT 133 Process Technology and Systems 4 Credits (4)

Provides instruction in the use of common process equipment. Students will use appropriate terminology and identify process equipment components such as piping and tubing, valves, pumps, compressors, turbines, motors, engines, heat exchangers, heaters, furnaces, boilers, filters dryers and other miscellaneous vessels. Included are the basic functions, scientific principles and symbols. Students will identify components on typical Process Flow Diagrams and Process and Instrument Diagrams.

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INMT 134 Maintenance Principles 4 Credits (4)

The course is an introduction to the maintenance of equipment utilizing mechanical, electrical and instrumentation concepts. Topics include: hand tools, bearing fundamentals, equipment lubrication, material handling, electrical safety, battery systems, diagrams, electrical production and distribution, transformers, breakers, switches, AC and DC motors, motor controllers and operations, and introduction to automation and instrumentation control.

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INMT 165 Equipment Processes 4 Credits (4)

This course introduces power transmission equipment and machinery components, including belt/chain driven equipment, speed reducers, variable speed drives, couplings, clutches, and conveying equipment. Students will learn the operation, maintenance, and troubleshooting for these types of equipment. The course also includes Overhead Crane Certification and Safety.

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INMT 205 Programmable Logic Controllers and Applications 4 Credits (4)

Students learn about programmable logic controllers; architecture; programming, interfacing, and applications. Hands-on experience on modern commercial PLC units is the main component.

Prerequisite(s): BCIS 1110

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INMT 223 Electrical Repairs 4 Credits (4)

This course outlines for students the types of problems that occur in electrical machinery and systems. The course covers trouble-shooting and diagnosis, preventative maintenance, and how to make necessary repairs.

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INMT 235 Mechanical Drives I 4 Credits (4)

This course teaches the fundamentals of mechanical transmission systems used in industrial, agricultural, and mobile applications. Students will learn industrial relevant skills including how to: operate, install and analyze performance, and design basic transmission systems using chains, feed-belts, spur gears, bearings, and couplings. Vibration analysis will be used to determine when to perform maintenance of power transmission components. The course also covers power transmission safety, and introduction to belt and chain drives (applications, installations, and tensioning), and introduction to gear drives, coupling, and bearing, basic troubleshooting, blueprint and print reading, learning the basics of electrical drives and PDM and PM.

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INMT 237 Hydraulics I 2 Credits (2)

This course teaches fundamentals of hydraulic systems used in industry mobile application. Students learn the basic theory of application of hydraulic and electricity as it applies to hydraulics. Covered in the course are basic systems, principles of flow, pressure, viscosity, filtration, and colling. Also covered are basic components such as motor, pumps, cylinders, piping and control and relief valves. Troubleshooting strategies are discussed, along with blueprint and print reading, and PDM and PM. Industry, relevant skills including how to operate, install, analyze performance, and design basic hydraulic systems, reviewing intermediate hydraulic components and system applications.

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INMT 261 Pump Operations I 4 Credits (4)

This course teaches how to select, operate, install, maintain and repair the many types of pumps used by industry. Students learn the theory and practical application of all types of processed pumps and pipe systems. It covers types, components, and systems operation. It also covers troubleshooting for flow loss and cavitation. Students learn how to select, operate, install, maintain and repair the many types of pumps used by industry. Other topics covered include: Net Positive Suction Head, pump flow/head measurement, pressure head conversion, pressure flow characteristics, cavitation, series/parallel pump operation, mechanical seal/stuffing box maintenance, multi stage operation and construction, positive displacement pumps, turbine, diaphragm, peristaltic, piston, gear, and magnetic pump systems.

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INMT 262 Piping Systems 2 Credits (2)

This course teaches students how to install, maintain and troubleshoot fluid systems such as how to select, size, identify, install a variety of types of piping, fittings, and valves. Measurement techniques from basic to precision measurement, gauging, including the fundamentals of dimensioning and tolerancing will be taught.

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INMT 263 Mechanical Drives II 4 Credits (4)

This course teaches the bearings and gears used in heavy duty mechanical transmission systems. This course will emphasize linear access drives, clutches, and brakes. In addition, this course teaches how to set up, operate and apply laser shaft alignment to a variety of industrial applications. This course is a study of the basic concepts and procedures for the maintenance and operations of pumps, turbines, seals, bearings, and compressors. The course will provide the student with the knowledge and skills necessary to perform proper maintenance, repair, replacement and selection of pumps, turbines, seals, bearings and compressors. Also covered are advanced gearbox, coupling and bearings, precision alignment (shaft, flange, and sheave), as well as basic vibration analysis and thermography as troubleshooting and RCA aids.

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INMT 264 Rigging 2 Credits (2)

This course teaches how to safely move loads of different shapes and sizes using a variety of different methods. Students will lift loads and demonstrate how to move it. Students will use hoists, slings, ropes and fittings to learn how to safely lift a wide variety of loads. Included are weight estimation, lifting rules, load ratings (sling, wire, ropes and hoists).

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INMT 265 Hydraulics II 2 Credits (2)

This course teaches advanced hydraulics systems. The student will learn operation of advanced hydraulic systems applications, equipment installation, performance analysis of motors and pumps, accumulators, control, relief and check valve, equipment maintenance, and system design. The course covers accumulators, sequence valves, pilot circuits and unloader valves. Students learn more troubleshooting, hydraulic drives and other applications.

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INMT 267 Pump Operations II 2 Credits (2)

This course teaches the student the disassembly, inspection and reassembly of centrifugal and positive displacement pumps. This course allows the student to identify and replace worn or broken components of pumps, and learn predictive and preventive maintenance principles. Lockout of the pump will be performed in addition to measurements and alignment.

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