

INDUSTRIAL MAINT TECH-CT

Program Overview

Certificate of Achievement - Industrial Maintenance Technology

Professional Skills and Career Paths

Process maintenance mechanic, fixed maintenance mechanic, millwright technician, mill maintenance, precision millwright, industrial mechanic, millwright mechanic

Student Learning Outcomes

The Certificate of Achievement in Industrial Maintenance Technology prepares students with essential skills for working with industrial equipment across various sectors.

Upon successful completion of the Industrial Maintenance certificate, students will be able to:

- Interpret Industrial Blueprints – Read and understand technical drawings and blueprints to identify the layout and components of industrial equipment.
- Perform Shaft Alignment – Accurately align shafts using laser and dial indicator methods to ensure proper equipment function.
- Troubleshoot and Maintain Systems – Diagnose and perform maintenance on pumps, gear trains, drives, and material handling systems to ensure efficient operation.
- Rebuild and Replace System Components – Rebuild or replace components in liquid and air handling systems to restore functionality.
- Replace Bearings and Seals – Safely replace bearings and seals in industrial equipment without compromising system integrity.
- Understand Electrical Safety and Theory – Demonstrate basic knowledge of electrical theory and safety protocols for working with single-phase and three-phase power equipment.
- Identify Equipment Failures – Use vibration analysis and root cause analysis techniques to identify and address equipment failures.
- Apply Metallurgical Knowledge – Identify metals and materials through standard tests to ensure compatibility and durability of equipment.
- Fabricate and Layout Equipment – Perform fabrication and layout tasks for industrial equipment, ensuring precision and adherence to specifications.
- Promote Workplace Safety – Follow safety regulations and practices to maintain a safe working environment at all times.

The Industrial Maintenance Technology certificate program is designed for the student who desires a highly technical and challenging field. Due to the intensity of the program, students will be very close to completion of an AAS degree and are encouraged to pursue the degree.

This program is a rigorous 42 week accelerated program and can be completed in that time.

The Industrial Maintenance Technology program prepares a student for an exciting entry-level career as an industrial mechanic in manufacturing, mining, construction, and the service industry. We use the NCCER curriculum which was developed by industry and is recognized nationally by industry as a training standard. Our program allows students to graduate with a Certificate of Achievement and the opportunity to receive a nationally recognized certification of completed training that they can use to find employment in this field. The student receives technical training in mechanical operations, fluid power, industrial pumps, preventive predictive maintenance, precision shaft alignment, electrical theory, welding processes, and all safety standards for tools and equipment in the work place.

Upon successful completion of the program, the student will possess the skills necessary to be able to diagnose and repair mechanical, electrical, liquid, and air handling systems found in most industrial, agricultural, mining, construction, and service industries. A graduate can work in all locations that use machinery to produce a product or service including steel mills, paper mills, mining operations, gravel quarries, universities, schools, textile mills, food processing plants, automotive plants, ship yards, power plants, hospitals, aerospace industry facilities, and office building/complexes.

Formal admission to this program is required.

For more information about any School of Industrial Technology and Workplace Development programs, contact 775-327-2167.

General Education Requirements

English/Communications (one course required)

ENG 100 Composition-Enhanced

5 Credits

Allows students to fulfill their first semester of English while completing the remediation process. Designed for students who did not place into ENG 101 on the placement test/writing sample, but did not score so low that they need ENG 95. Allows a student to refine specific skill deficiencies while completing the first semester of freshman composition (ENG 100 is equivalent to ENG 101). Students will have additional Academic Success Center requirements. Although it is a five-credit course, it does not replace ENG 102. After successful completion of ENG 100, a student must take ENG 102 to complete the general education requirement.

ENG 101 Composition I

3 Credits

Critical reading and writing of the expository essay. Emphasizes pre-writing, strategies for organization, and revision.

ENG 103 English Fund Tech Writing 3 Credits

Emphasizes the essentials of sentence structure, paragraph development, grammar, and punctuation. Class writing assignments apply these essentials to a variety of on-the-job related documents such as memos, letters, and reports. Course is recommended for students seeking certificates of achievement and meets the requirement for a 100-level English course. Upon successful completion of ENG 103, students may move directly into ENG 107 or ENG 101.

ENG 107 Tech Communications I 3 Credits

Basic skills necessary for successful on-the-job communications including improved letter and report writing, persuasion, interviewing, process, mechanism description, and business and technical grammar.

Mathematics (one course required): Choose from the courses listed below or any higher-level math course. Excludes STAT 152 and MATH 389

MATH 116 Technical Mathematics I 3 Credits

Provides technical mathematical core material so that the student gains practical problem solving experience. May include arithmetic operation, integers, exponents, scientific notation, algebraic expressions, equations, metric system, trigonometry, and logarithms. This course satisfies the general education requirement for occupational/technical AAS degree. It is recommended that students have completed prerequisites within two years of enrolling in this course.

MATH 116E Technical Mathematics Expanded 3-5 Credits

Provides technical mathematical core material so that the student gains practical problem solving experience. May include arithmetic operation, integers, exponents, scientific notation, algebraic expressions, equations, metric system, trigonometry, and logarithms. This course satisfies the general education requirement for occupational/technical AAS degree.

MATH 120 Fund of College Math 3 Credits

Includes set theory, logic, consumer mathematics, measurement, geometry, probability, and statistics. Course is broad in scope, emphasizing applications. It is recommended that students have completed prerequisites within two years of enrolling in this course.

MATH 120E Fund of College Math Expanded 3 Credits

Fundamentals of College Mathematics with Corequisite Support: Includes real numbers, consumer mathematics, variation, functions, relations, graphs, geometry, probability, and statistics. Course is broad in scope, emphasizing applications. Fulfills the lower-division mathematics requirement for a Bachelor of Arts Degree. Satisfies mathematics requirement for baccalaureate degrees.

MATH 126 Precalculus I 3 Credits

A third course in algebra that stresses polynomial, quadratic, rational, exponential, and logarithmic functions, including their graphs and applications; complex numbers; systems of equations; and basic operations with matrices and determinants, including Cramer's rule. It is recommended that students have completed prerequisites within two years of enrolling in this course.

MATH 126E Precalculus I Expanded 3 Credits

Precalculus I Expanded with Co-requisite support: Includes equations, relations, functions, graphing; polynomial, rational, exponential, logarithmic, and circular functions with applications; coordinate geometry of lines and conics; analytic trigonometry; matrices and determinants; and binomial theorem. It is recommended that students have completed prerequisites within two years of enrolling in this course.

Human Relations (Embedded in Maintenance Curriculum)

IT 106 Maintenance/Process Term 1-4 Credits

A one-to-four credit lecture, discussion, and laboratory course designed to introduce students to millwright and process terminology. Students will learn basic terminology and functions of primary process equipment and their sub-components. This course will also cover parts of basic safety policies and procedures for use in the laboratory and also translate to the job or work site safety.

Program Requirement

IT 102 Pipefitting Principles 1-4 Credits

This is a one to four credit lecture, discussion, and laboratory course designed to introduce students to the basics of pipefitting. This course will cover basic pipefitting and introduce students to the tools and materials used to complete projects in industries associated with the pipefitting field.

IT 103 Industrial Pump Technology 1-4 Credits

A one-to-four-credit laboratory and lecture course covering various industrial pumps. Emphasis is on centrifugal pump maintenance and repair and introductory hydraulic engineering concepts that pertain to centrifugal pumps. Pump seals, packing techniques, and bearings are also discussed. Unlimited Repeatability.

IT 105 Mechanical Power Trans 1-4 Credits

A one-to-four-credit lecture, demonstration, and laboratory course in the study and application of bearings, belt and mechanical drives, chain and chain drives, couplings, clutches, gears, and fluids in the transmission of power used in the industrial processes.

IT 106 Maintenance/Process Term 1-4 Credits

A one-to-four credit lecture, discussion, and laboratory course designed to introduce students to millwright and process terminology. Students will learn basic terminology and functions of primary process equipment and their sub-components. This course will also cover parts of basic safety policies and procedures for use in the laboratory and also translate to the job or work site safety.

IT 201 Blueprint Read/Meas Fund 1-6 Credits

A laboratory and lecture course covering blueprint reading fundamentals for mechanical and construction drawings. Also, an introduction to different types of measuring instruments and their proper uses in industry.

IT 207 Boiler/Convey/Pneum System 1-5.5 Credits

A one to five-point-five credit lecture, demonstration, and laboratory course in the study and application of boiler, conveyer, and pneumatic systems. The course will cover operation, maintenance, and repair of boiler, conveyer, and pneumatic systems. Safety is emphasized. Unlimited repeatability.

