Butler Tech Precision Machining
Essential Skills Profile

This profile provides an outline of the skills required for the successful completion of this career program. Additional information is located on the Butler Tech website at: https://www.butlertech.org/high-school/ and selecting the corresponding career program.

Skills

Operation and Control	Controlling operations of equipment or systems.
Critical Thinking	Using Logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.
Monitoring	Monitoring / Assessing performance of yourself, other individuals, or organizations to make improvements or take corrective action.

Knowledge Required in Precision Machining

Mathematics	Knowledge of arithmetic, algebra, geometry, calculus, statistics, and their applications.
Mechanical	Knowledge of machines and tools, including their designs, uses, repair, and maintenance.
Production and Processing	Knowledge of raw materials, production processes, quality control, costs, and other techniques for maximizing the effective manufacture and distribution of goods.

Available Certifications

Possible Career Pathways

CNC Operator	Manufacturing Maintenance
Inspector	Engineer

Precision Machining Activities

- Calculate dimensions or tolerances, using instruments, such as micrometers or vernier calipers.
- Machine parts to specifications, using machine tools, such as lathes, milling machines, shapers, or grinders.
- Measure, examine, or test completed units to check for defects and ensure conformance to specifications, using precision instruments, such as micrometers.
- Set up, adjust, or operate basic or specialized machine tools used to perform precision machining operations.
- Program computers or electronic instruments, such as numerically controlled machine tools.
- Study sample parts, blueprints, drawings, or engineering information to determine methods or sequences of operations needed to fabricate products.
- Monitor the feed and speed of machines during the machining process.
- Maintain machine tools in proper operational condition.
- Support metalworking projects from planning and fabrication through assembly, inspection, and testing, using knowledge of machine functions, metal properties, and mathematics.
- Fit and assemble parts to make or repair machine tools.
- Align and secure holding fixtures, cutting tools, attachments, accessories, or materials onto machines.
- Operate equipment to verify operational efficiency.
- Confer with numerical control programmers to check and ensure that new programs or machinery will function properly and that output will meet specifications.
- Evaluate machining procedures and recommend changes or modifications for improved efficiency or adaptability.
- Install repaired parts into equipment or install new equipment.
- Diagnose machine tool malfunctions to determine need for adjustments or repairs.
- Design fixtures, tooling, or experimental parts to meet special engineering needs.
- Dismantle machines or equipment, using hand tools or power tools to examine parts for defects and replace defective parts where needed.
- Dispose of scrap or waste material in accordance with company policies and environmental regulations.
- Lay out, measure, and mark metal stock to display placement of cuts.
- Confer with engineering, supervisory, or manufacturing personnel to exchange technical information.
- Separate scrap waste and related materials for reuse, recycling, or disposal.
- Test experimental models under simulated operating conditions, for purposes such as development, standardization, or feasibility of design.
- Set up or operate metalworking, brazing, heat-treating, welding, or cutting equipment.
- Check work pieces to ensure that they are properly lubricated or cooled.
- Prepare working sketches for the illustration of product appearance.
- Establish work procedures for fabricating new structural products, using a variety of metalworking machines.
- Install experimental parts or assemblies, such as hydraulic systems, electrical wiring, lubricants, or batteries into machines or mechanisms.
- Advise clients about the materials being used for finished products.

Possible College Credits

College Credit Plus in English, Math, Social Studies, or Science	Must be preapproved. Must pass a college course at an Ohio college or College Credit Plus class at Butler Tech.
Career Technical Credit Transfer	The Ohio Transfer to Degree Guarantee helps career and technical students transfer credits earned in high school to community college or four-year degree programs. The credit can be used at any Ohio public college or university: • If you successfully completed your career-technical program and passed certain required assessments. • If you attend a similar program at a public Ohio college or university. For more information, go to www.transfercredit.ohio.gov
Articulated Credit	Butler Tech has agreements with certain colleges;if you attend one of those colleges, you can get credit toward a specific degree.

*Additional college or post-secondary education may be required in this field