

MACHINE SHOP

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COURSE OBJECTIVE

Students will obtain education and skills that emphasize CNC computerized training in order to place students in modern, high-tech positions. The manual lathe and milling and grinding will also be covered in depth.

COURSE DESCRIPTION

This three-year course provides tenth, eleventh and twelfth graders the skills needed for entry into the Machining field through basic, hands-on machining practice on lathes, milling machines and grinders. Topics include set-up, tool selection and methods used on various materials such as steel, aluminum and brass. Computer-part programming and machine operation are also included in the training.

Computerized Machining | Manual Machining | Programming Software

REQUIRED SUPPLIES

Leather Work Boots (Steel Toe Required) | Safety Glasses (Clear Lenses)
Shop Shirt (Royal Blue Polo) | Workwear Pants (Black)

TEXTBOOKS

Machinery's Handbook, 27th Edition; Erik Oberg; Tooling U Online
Machinist's Ready Reference; C. Weingartner; Tooling U Online
Haas Mill Operator's Manual; 2005
Haas Lathe Operator's Manual; 2005

COOPERATING COMPANIES

Allegheny Technologies, Inc. (ATI)	Range Resources
Bradley Machine	Ross Mould–Washington, PA
Caff Company	Testa Machine Company, Inc.–Slovan, PA
Davan Manufacturing	Tygard Machine & Manufacturing Co., Inc.
Lincoln Manufacturing–Washington, PA	Walter USA
Millenium Machine, Inc.–Washington, PA	Weld Tooling, Inc.
Miller Plastics	Wynn Machine Works, Inc.
Perryman Company–Houston, PA	

SPECIALIZED SHOP EQUIPMENT

Computerized Lathes | Computerized Mills | GIBBS CAM Programming Software
Mastercam Parts Programming Software

CERTIFICATIONS

National Institute for Metalworking Skills, Inc.: CNC Milling-Programming Setup and Operations; CNC Turning:-Programming Setup and Operations; Machining Level I CNC Milling; Machining Level I CNC Turning; Manual Milling; Manual Turning Between Centers; Manual Turning with Chucking; Machining Level I Measurement, Materials and Safety; Machining Level I Planning, Benchwork and Layout

ARTICULATION AGREEMENTS

California University of Pennsylvania–Industrial Technology
Pennsylvania College of Technology–Machinist, General
Westmoreland County Community College–Computer Numerical Control Technology; Machine Technology

POST-SECONDARY TRAINING OPTIONS

Community College of Allegheny County–Machine Shop Technology
Pennsylvania College of Technology–Machine Shop Technology
Robert Morris University–Engineering
Westmoreland County Community College–Machine Technology

POTENTIAL CAREERS

CNC Machine Operator | Computer Programmer | Foreman | Machine Shop Owner | Machinery Sales
Machinist | Mold Maker | Quality Control Technician | Tool and Die Maker

MACHINIST SKILLS

Operation and Control — Controlling operations of equipment or systems.

Operation Monitoring — Watching gauges, dials, or other indicators to make sure a machine is working properly.

Mathematics — Using mathematics to solve problems.

Equipment Selection — Determining the kind of tools and equipment needed to do a job.

Troubleshooting — Determining causes of operating errors and deciding what to do about it.

Reading Comprehension — Understanding written sentences and paragraphs in work related documents.

Quality Control Analysis — Conducting tests and inspections of products, services, or processes to evaluate quality or performance.

Equipment Maintenance — Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.

Active Learning — Understanding the implications of new information for both current and future problem-solving and decision-making.

Active Listening — Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate and not interrupting at inappropriate times.

WAGES AND EMPLOYMENT TRENDS FOR MACHINISTS

Median Wages (2020)	\$22.62 Hourly, \$47,040 Annually
Number of Jobs (2019)	460,600 Employees
Job Outlook (2019-2029)	3% (As Fast as Average)
Employment Change (2019-2029)	12,400

Source: *Occupational Outlook Handbook*