

# Precision Manufacturing Technology

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### Program Overview for Employers

The Precision Manufacturing Machining Technology (PMT) program for deaf and hard-of-hearing students at Rochester Institute of Technology (RIT) prepares students for careers in the precision machining and precision optics manufacturing industries. **Graduates are well qualified and prepared for jobs that include computer numerical control set-up, computer numerical control operator and programmer, general machinist, inspector, instrument maker, mold maker, and tool maker as these jobs apply to both the precision machining and precision optics manufacturing industries.**

#### Degree Awarded

Associate in Occupational Studies (AOS)

#### Potential Job Candidates

Approximately 35 students currently are enrolled.

#### Cooperative Education (Co-op) Component Required

Students are required to complete one 10-week summer co-op session.

#### Equipment and Facilities

##### Metal Working Equipment

Students use precision machines common to industrial shop floors. They learn to set up, program and operate:

- Bridgeport Series 1 milling machines with Prototrak SMX Conversational Control 6
- Bridgeport Series 2 milling machine with Prototrak SM Conversational Control 1
- Trak DPM 3 axis bed mill Trak conversational control 1
- Haas TL1 lathes Conversational Controls 2
- Manual lathes with Digital Readout (Clausing, LeBlond) 4
- Vertical band saw (DoAll) 1
- Horizontal bandsaw cutoff (DoAll) 1
- 6 x 12 Surface Grinders (Harig, Boyer Schultz) 5
- Cylindrical grinder (Myford) 1

- Drill press 1
- Shear and press brake 1 ea.
- Optical Comparator
- CNC Haas TML with 4<sup>th</sup> axis rotary ability

#### Computer Numerical Control (CNC) equipment

Students receive a full year of set-up, operation and programming instruction on:

- Hardinge VMC-600 three axis machining center (Fanuc Oi-MB control)
- Hardinge CHNC I two axis turning center (Fanuc Ot control)
- 2 Haas Toolroom Mill TM1
- 3 Axis machining
- Haas TL1 CNC Toolroom lathe Fully Enclosed with Tool Turret and coolant
- Sodick AQ300 CNC Wire Electrical Discharge Machines

#### Precision Optics manufacturing equipment

- Optotech SM 80 CNC curve generator 1
- Rogers & Clark Spherical Curve generator 1
- Blanchard #11 rotary surface grinder 1
- PR Hoffman double-sided planetary machines 2
- Strasbaugh 4 spindle polisher 1
- 2X Tabletop manual spherical grinders

# Precision Manufacturing Technology

## Student Skills and Capabilities – Preparation for a Career

Students learn to use programs that include G and M code, as well as G D and T training. They can produce parts with linear and circular interpolation, as well as numerous canned cycles and sub-routines. Students complete two trigonometry courses specially designed to solve complex machining problems.

CIMT students qualify for various positions in the precision machine industry and the precision optics manufacturing industry. They are proficient at creating and examining 3D models and reading blueprints, lapping and polishing, and are skilled in the set-up and operation of lathes, milling machines, wire EDMs and grinders. Students receive extensive safety training and recognize safety as a top priority.

## Selected Software Used to Develop Technical Skills

- AutoCad
- Fusion 360
- MasterCAM 2020
- Microsoft Excel
- Microsoft PowerPoint
- Microsoft Windows
- Microsoft Word
- SolidWorks

## Selected Technical Courses Leading to an Associate Degree

- Algebra
- Blueprint Reading I-II
- CIMT I-V
- CNC I
- CNC II
- Geometric Dimensions and Tolerances
- Precision Grinding
- Precision Measurement I-II
- Precision Optics MFG I-II
- Trigonometry for Coordinate Analysis

## The following employers throughout the country have hired Computer Integrated Machining Technology students and graduates:

- Bausch & Lomb
- Caldwell Manufacturing
- Cryomech, Inc.
- General Electric
- Goodson Manufacturing
- Metalex Manufacturing, Inc.
- MWI, Inc.
- Parabit Systems, Inc.
- HDM Hydraulics, LLC
- Solar Turbines
- Sydor Optics
- The Gleason Works
- Tobyhanna Army Depot
- Zip Products, Inc.

## Contact us:

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RIT/NTID co-op students, graduates and alumni provide employers with highly trained, highly motivated employees with excellent skills. We appreciate your interest in our co-op students and graduates and will work with you through the recruiting process to help you hire the right employee. **For your convenience, access further information and services on our website at [www.rit.edu/ntid/nce](http://www.rit.edu/ntid/nce).**