

## Program Number 31-420-1 Technical Diploma • Two Terms

### ABOUT THE PROGRAM

Learn Computer Numerical Control (CNC) and Machining at your own pace, through hands-on learning. Just about every product that you use in your daily activities is the result of a machine tool manufacturing process. If you like hands-on work, are detail-oriented, and are able to develop and follow through on work instructions, a career in machine tool operation offers you lifelong opportunities.

### PROGRAM OUTCOMES

- Apply basic safety practices in the machine shop.
- Interpret industrial/engineering drawings.
- Apply precision measuring methods to part inspection.
- Perform basic machine tool equipment set-up and operation
- Perform programming, set-up and operation of CNC Machine Tools.

### CAREER AND EDUCATION ADVANCEMENT OPPORTUNITIES

Lakeshore credits transfer to over 30 universities. For more information visit [gotoltc.edu/future-students/transfer](http://gotoltc.edu/future-students/transfer).

### ADMISSIONS AND FIRST SEMESTER ENROLLMENT STEPS

- Submit online application.
- Complete the online Student Success Questionnaire.
- Complete Student Success Tutorial prior to meeting with your program counselor.
- Schedule your 1st Time Program Counseling/Registration Session with your assigned Program Counselor/Success Coach to plan your first semester schedule, review your entire plan of study and discuss the results of the Student Success Questionnaire.

*\*Submit transcripts and test scores (optional, highly recommended): College transcripts, along with high school transcripts and test scores from within the last five years, used for course registration. Official transcripts needed for transferring college credit(s) and for financial aid purposes.*

### APPROXIMATE COSTS

\$149.50 per credit tuition (WI resident) plus \$8.97 per credit student activity fee. Material fee varies depending on course. Other fees vary by program. Visit [gotoltc.edu/financial-aid/tuition-and-fees](http://gotoltc.edu/financial-aid/tuition-and-fees) for details.

### FINANCIAL AID

This program is eligible for financial aid. Visit [gotoltc.edu/Financial-Aid](http://gotoltc.edu/Financial-Aid) or talk with your Admissions Advisor about how to apply for aid.

### SPECIAL NOTE

- Learn when you want. Progress at your own pace. Receive personalized coaching and support. The full CBE definition may be found at [gotoltc.edu/cbe](http://gotoltc.edu/cbe).
- This program offers flexible start dates throughout the year.

### RELATED PROGRAMS

- CNC Automation Technician Technical Diploma
- Machinist Apprenticeship
- Tool & Die Apprenticeship

### CONTACT

Lakeshore Admissions Advisor  
 920.693.1366 • [Admissions@gotoltc.edu](mailto:Admissions@gotoltc.edu)

Catalog No.	Class Title	Credit(s)
<b>Term 1</b>		
31420310	Shop Tools and Fasteners	1
31420330	Precision Measuring	1
31420385	Orthographic Projection Print	1
31420325	Machining Math Basic	1
31420338	Drills and Saws	1
31420340	Manual Lathe Operation	1
31420350	Manual Mill Operation	1
31420386	GD&T Intro	1
31420326	Machining Geometry and Basic Trigonometry	1
31444301	G&M Code Programming	1
31444303	CNC Machining Operation	1
31444309	CNC Turning Operation	1
31420359	Heat Treat and Precision Grinding	1
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<b>Term 2</b>		
31801361	Interpersonal Skills	1
31801360	Workplace Fundamentals	1
31420353	ProtoTrak Mill-Squaring Programming	1
31420354	ProtoTrak Mill-Slot and Hole Programming	1
31444307	Mill-2D Using CAM	1
31444311	CNC Turning-Turning and Cut Off Setup	1
31444313	CNC Turning-Hole Producing Setup/Threading	1
31444315	CNC Machining-Facing and End Milling Setup	1
31444317	CNC Machining-Hole/Slot/Engraving Setup	1
31444321	CNC Turning 2D Using CAM	1
31420361	Complex Print Drawings	1
31420362	Advanced Precision Measuring	1
31420363	GD&T-Inspection	1
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**TOTAL 26**

*Curriculum and program acceptance requirements are subject to change. Program start dates vary; check with your program counselor for details. The tuition and fees are approximate based on 2024-2025 rates and are subject to change prior to the start of the academic year.*

**ADVANCED PRECISION MEASURING**...prepares the learner to demonstrate the use of advanced precision measuring instruments. COREQUISITE: 31420330 Precision Measuring

**CNC MACHINING OPERATION**...prepares the learner to set up and operate CNC Machining Center safely.

**CNC MACHINING-FACING AND END MILLING SETUP**...prepares the learner to perform setup of CNC machining center for facing and end milling operations. COREQUISITE: 31444303 CNC Machining Operation or PREREQUISITE: 31420307 Intro to CNC Machining Center

**CNC MACHINING-HOLE/SLOT/ENGRAVING SETUP**...prepares the learner to perform setup of CNC machining center for hole producing, milling slots and engraving operations. COREQUISITE: 31444315 CNC Machining-Facing and End Milling Setup

**CNC TURNING 2D USING CAM**...prepares the learner to create lathe toolpaths using CAM software.

**CNC TURNING OPERATION**...prepares the learner to set up and operate CNC turning center safely.

**CNC TURNING-HOLE PRODUCING SETUP/THREADING**...prepares the learner to perform setup of CNC turning center for hole producing and threading operations. COREQUISITE: 31444311 CNC Turning-Turning and Cut Off Setup

**CNC TURNING-TURNING AND CUT OFF SETUP**...prepares the learner to perform setup of CNC turning center for turning and cutoff operations. COREQUISITE: 31444309 CNC Turning Operation or 31420308 Intro to CNC Turning Center

**COMPLEX PRINT DRAWINGS**...prepares the learner to interpret complex part drawings. COREQUISITE: 31420386 GD&T Intro

**DRILLS AND SAWS**...learner will demonstrate use of sawing and drilling machines safely. COREQUISITE: 31420310 Shop Tools and Fasteners or PREREQUISITES: 31420394 Industrial Maintenance Machine Tool Intro or 10420194 Machine Tool Intro or CONDITION: 324571 Welding Fab Tech enrollment requirements met

**G&M CODE PROGRAMMING**...prepares the learner to create milling G&M code programs.

**GD&T INSPECTION**...prepares the learner to inspect GD&T part features as well as programming and operation of coordinate measuring machine (CMM). COREQUISITE: 31420362 Advanced Precision Measuring

**GD&T INTRO**...prepares the learner to interpret manufacturing drawings for geometric dimension and tolerances (GD&T). COREQUISITE: 31420385 Orthographic Projection Print

**HEAT TREAT AND PRECISION GRINDING**...prepares the learner to perform heat treating and precision grinding operations.

**INTERPERSONAL SKILLS**...prepares the learner to model interpersonal skills, ethics and diversity.

**MACHINING GEOMETRY AND BASIC TRIGONOMETRY**...prepares the learner to apply geometry and basic trig to solve technical problems. COREQUISITE: 31420325 Machining Math Basic

**MACHINING MATH BASIC**...prepares the learner to apply basic technical math skills to solve problems.

**MANUAL LATHE OPERATION**...prepares the learner to perform lathe facing, turning, hole producing and threading operations safely. COREQUISITE: 31420310 Shop Tools and Fasteners or 31420394 Ind Mtn Machine Tool Introduction or 10420194 Machine Tool Introduction or CONDITION: 324571 Welding Fabrication Technician, 104622 Electro-Mech Maintenance Technician, or 314622 Maintenance Mechanic program requirements met

**MANUAL MILL OPERATION**...prepares the learner to perform squaring, slot milling and hole producing using a vertical mill machine safely. COREQUISITE: 31420310 Shop Tools and Fasteners or 31420394 Ind Mtn Machine Tool Intro or 10420194 Machine Tool Intro or CONDITION: 324571 Welding Fabrication Technician, 104622 Electro-Mech Maintenance Technician, or 314622 Maintenance Mechanic program requirements met

**MILL-2D USING CAM**...prepares the learner to create 2D milling toolpaths using computer aided machining (CAM) software.

**ORTHOGRAPHIC PROJECTION PRINT**...prepares the learner to interpret manufacturing orthographic projection prints.

**PRECISION MEASURING**...prepares the learner to demonstrate use of precision measuring instruments.

**PROTOTRAK MILL-SLOT AND HOLE PROGRAMMING**...prepares the learner to mill slots and hole producing operations using conversational programming on ProtoTrak vertical milling machine. COREQUISITE: 31420353 ProtoTrak Mill-Squaring Programming and PREREQUISITE: 31420351 Mill - Slots and Holes or COREQUISITE: 31420350 Manual Mill Operation

**PROTOTRAK MILL-SQUARING PROGRAMMING**...prepares the learner to perform squaring operations using conversational programming on ProtoTrak vertical milling machine.

**SHOP TOOLS AND FASTENERS**...prepares the learner to demonstrate use of shop tools and fasteners. COREQUISITE: 31420330 Precision Measuring

**WORKPLACE FUNDAMENTALS**...prepares the learner to incorporate problem solving, creativity and communication skills into daily workplace habits.