

Machine Tool Operation

35-credit Technical Diploma

About the Program

Become a skilled operator of the engine lathe, vertical milling machine, surface grinder, and drill press through this technical diploma. Related instruction in Computer Numerical control (CNC), blueprint reading, and applied math will give students the background and machining ability to become skilled machine tool operators.

Potential Job Title

- CNC Machinist

Credit Transfer

Expand upon the skill base received in Machine Tool Operation by fully transferring credits into WCTC's Tool & Die Technical Diploma program.

Admission Process

- Fill out a WCTC application
- Send \$30 non-refundable application fee
- Send high school transcript or GED/HSED
- Send any previous college transcripts
- Complete Skills Assessment test (COMPASS)
- Begin pursuing Financial Aid options

For more information, call 262.691.5200.

Required Courses

Credits

First Semester

420-316	CNC Machining Center Operation	2
420-320	Machine Tool Operation I	4
420-321	Machine Tool Operation II	4
420-326	Machine Tool Theory I	1
420-330	Industrial Blueprint Reading I	2
420-386	CNC Machining Center	2
804-304	Industrial Math I	2+
809-345	Basic Workplace Psychology	1
Total semester credits		18

Second Semester

420-317	CNC Turning Center Operation	2
420-323	Machine Tool Operation III	4
420-324	Machine Tool Operation IV	4
420-328	Machine Tool Theory II	1
420-331	Industrial Blueprint Reading II	2
420-387	CNC Turning Center	2
804-305	Industrial Math II	2+
Total semester credits		17

+ Proficiency exam available

Curriculum is current as of catalog printing. The most current curriculum requirements for graduation will be provided upon admission to program, or review at www.wctc.edu.

**Machine Tool Operation
Required Courses**

420-316 CNC Machining Center Operation 2

Learn the fundamentals of CNC. Develop the skills necessary to set up and operate a CNC vertical machining center. Topics that will be covered include: introduction to CNC, G and M codes, basic programming format, speeds and feeds, tool offsets, and the basic features of CNC control panels. Blueprint interpretation and math skills will be used to correctly select tooling, and determine workholding method.

420-317 CNC Turning Center Operation 2

Learn the fundamentals of CNC. Develop the skills necessary to set up and operate a CNC turning center. Topics that will be covered include: introduction to CNC, G and M codes, basic programming format, speeds and feeds, tool offsets, and the basic features of CNC control panels. Blueprint interpretation and math skills will be used to correctly select tooling, and determine workholding method.

420-320 Machine Tool Operation I 4

Learn entry-level skills on basic machine tools, including lathes, drill presses, grinders, and milling machines. Produce parts from engineering drawings, and make measurements using inspection tools such as micrometers, height gages, verniers, thread gages, and the optical comparator. Develop the machine operating skills needed to produce parts to the tolerances commonly found in industrial situations.

420-321 Machine Tool Operation II 4

Enhance ability to use basic machine tools, including lathes, drill presses, grinders, and milling machines. Produce parts from engineering drawings, and make measurements using inspection tools such as micrometers, height gages, verniers, thread gages, and the optical comparator. Develop the machine operating skills needed to produce parts to the tolerances commonly found in industrial situations.
Prerequisites: 420-320 Machine Tool Operation I (or concurrent)

420-323 Machine Tool Operation III 4

Hone the skills related to using basic machine tools, including lathes, drill presses, grinders, and milling machines. Produce parts from engineering drawings, and make measurements using inspection tools such as micrometers, height gages, verniers, thread gages, and the optical comparator. Develop the machine operating skills needed to produce parts to the tolerances commonly found in industrial situations.
Prerequisites: 420-321 Machine Tool Operation II

420-324 Machine Tool Operation IV 4

Master the entry-level skills needed to use basic machine tools, including lathes, drill presses, grinders, and milling machines. Produce parts from engineering drawings, and make measurements using inspection tools such as micrometers, height gages, verniers, thread gages, and the optical comparator. Develop the machine operating skills needed to produce parts to tolerances commonly found in industrial situations.
Prerequisites: 420-323 Machine Tool Operation III (or concurrent)

420-326 Machine Tool Theory I 1

Become familiar with basic theory related to machine tools including lathes, drill presses, grinders and milling machines. Learn the theory of using measuring tools such as micrometers, height gages, verniers, thread gages, and the optical comparator.

420-328 Machine Tool Theory II 1

Increase knowledge of the theory related to machine tools including lathes, drill presses, grinders and milling machines. Learn the theory of using measuring tools such as micrometers, height gages, verniers, thread gages, and the optical comparator.
Prerequisites: 420-326 Machine Tool Theory I

420-330 Industrial Blueprint Reading I 2

Learn universally applicable techniques for interpreting all mechanical and industrial drawings through the study of drawing standards, abbreviations, basic rules for dimensioning, and various types of sectional views. Become familiar with geometric dimensioning and tolerancing.

420-331 Indust Blueprint Rd II 2

Explore advanced concepts related to accessing information relative to manufacturing. Use several computer applications to access drawing information and to create drawings. Complete worksheets with questions covering molds, dies, fixtures, and other workholding applications.
Prerequisites: 420-330 Industrial Blueprint Reading I or 421-350 Machine Blueprint Reading I

420-386 CNC Machining Center 2

Develop the skills needed to program, set up, and operate a CNC vertical machining center. Use blueprint interpretation and math skills to select tooling, determine a workholding method, and write a CNC program to completely machine a part. Learn to alter, insert, and delete portions of existing programs in order to maintain control of parts produced.

420-387 CNC Turning Center 2

Develop the skills needed to program, set up, and operate a CNC turning center. Use blueprint and math skills to select tooling, determine a method of workholding, and write a CNC program to completely machine a part. Learn to modify existing programs and offsets to maintain dimensional control.

804-304 Industrial Math I 2

Explore the topics of applied arithmetic and algebra during this individualized course. Study concepts related to measurement, fractions, decimals, percents, ratio and proportion, signed numbers, formula substitution, solutions to equations, tapers and gears.

804-305 Industrial Math II 2

Examine topics in geometry and trigonometry that are related to the metalworking trades. Practice applying geometric theorems and solving both right and oblique triangle problems.
Prerequisites: 804-304 Industrial Math I

809-345 Basic Workplace Psychology 1

Develop the skills needed for building positive relationships with others by taking part in unique workplace scenarios and exploring psychological concepts.