

## Contact Us:

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## Program Overview

Because of the rapid advances made in industrial technology over the past decade, few career fields have grown as much as metalworking. Students in this program get a full introduction to the field and practical experience in machining operations used in practically every manufacturing industry.

The graduate, highly skilled in the use of precision machines and instruments, is capable of making intricate parts meeting precise specifications. With practical experience in bench work, floor work, assembly layout, selected milling machine operations, lathe, shaper, drill press, numerical control programming and machining, machine tool maintenance and inspection, the graduate is prepared to handle a wide range of responsibilities in the metalworking industry.

## PROGRAM REQUIREMENTS

### A.A.S., Major in Machine Tool Technology

Because of the rapid advances made in industrial technology over the past decade, few career fields have grown as much as metalworking. Students in this program get a full introduction to the field and practical experience in machining operations used in practically every manufacturing industry.

The graduate, highly skilled in the use of precision machines and instruments, is capable of making intricate parts meeting precise specifications. With practical experience in bench work, floor work, assembly layout, selected milling machine operations, lathe, shaper, drill press, numerical control programming and machining, machine tool maintenance and inspection, the graduate is prepared to handle a wide range of responsibilities in the metalworking industry. This curriculum offers a certificate in Machine Tool Operator.

Upon completion of 65 credit hours, a student will be awarded an Associate in Applied Science degree with a major in Machine Tool Technology. A student may elect to receive a Diploma in Applied Science with a major in Machine Tool after completion of 40 credit hours.

### GENERAL EDUCATION COURSES

COURSES	CREDIT HOURS
ENG 165 Professional Communications.....	3.0
<i>or approved ENG course</i>	
MAT 170 Algebra, Geometry and Trigonometry I.....	3.0
<i>or MAT 110 College Algebra</i>	
<i>or MAT 120 Probability and Statistics</i>	
MAT 171 Algebra, Geometry and Trigonometry II .....	3.0
<i>or MAT 111 College Trigonometry</i>	
Elective Social/Behavioral Sciences .....	3.0
Elective Humanities/Fine Arts .....	3.0

**SUBTOTAL: 15.0**

### REQUIRED CORE SUBJECT AREAS

COURSES	CREDIT HOURS
MTT 120 Machine Tool Print Reading.....	3.0
MTT 121 Machine Tool Theory I .....	3.0
MTT 123 Machine Tool Theory II .....	3.0
MTT 130 Fundamentals of Geometric Dimensions and Tolerancing .....	2.0
MTT 141 Metals and Heat Treatment .....	3.0
MTT 250 Principles of CNC .....	3.0

**SUBTOTAL: 17.0**

### OTHER COURSES REQUIRED FOR GRADUATION

COURSES	CREDIT HOURS
CPT 169 Industrial Computer Applications .....	3.0
MTT 122 Machine Tool Practice I .....	4.0
MTT 124 Machine Tool Practice II .....	4.0
MTT 126 Machine Tool Practice III.....	4.0
MTT 143 Precision Measurement.....	2.0
MTT 161 Machine Tool Maintenance Theory .....	2.0
MTT 222 Tool and Diemaking Practice I.....	4.0
MTT 224 Tool and Diemaking Practice II .....	4.0
MTT 251 CNC Operations .....	3.0
MTT 253 CNC Programming and Operation.....	3.0

**SUBTOTAL: 33.0**

**TOTAL CREDIT HOURS: 65.0**

## D.A.S., Major in Machine Tool

This diploma provides students with a primary technical specialty. All courses within this diploma will be awarded for credit toward an Associate in Applied Science degree with a major in Machine Tool Technology.

### GENERAL EDUCATION COURSES

COURSES	CREDIT HOURS
ENG 165 Professional Communications..... 3.0 <i>or approved ENG course</i>	
MAT 170 Algebra, Geometry and Trigonometry I..... 3.0 <i>or MAT 110 College Algebra or MAT 120 Probability and Statistics</i>	
Elective Social/Behavioral Sciences ..... 3.0	

**SUBTOTAL: 9.0**

### REQUIRED CORE SUBJECT AREAS

COURSES	CREDIT HOURS
MTT 120 Machine Tool Print Reading..... 3.0	
MTT 121 Machine Tool Theory I ..... 3.0	
MTT 123 Machine Tool Theory II ..... 3.0	
MTT 141 Metals and Heat Treatment ..... 3.0	
MTT 143 Precision Measurement..... 2.0	

**SUBTOTAL: 14.0**

### OTHER COURSES REQUIRED FOR GRADUATION

COURSES	CREDIT HOURS
MTT 122 Machine Tool Practice I ..... 4.0	
MTT 124 Machine Tool Practice II ..... 4.0	
MTT 126 Machine Tool Practice III..... 4.0	
MTT 161 Machine Tool Maintenance Theory ..... 2.0	
MTT 250 Principles of CNC ..... 3.0	

**SUBTOTAL: 17.0**

**TOTAL CREDIT HOURS: 40.0**

## Machine Tool Operator Certificate

The Machine Tool Operator certificate is designed for those students who would like to learn basic machining skills without being enrolled in a full-time degree program. The certificate consists of all the machine tool courses given in the first two semesters of the diploma program. All the classes can be used for credit toward a diploma or associate degree.

### REQUIRED COURSE INFORMATION

COURSES	CREDIT HOURS
MTT 120 Machine Tool Print Reading..... 3.0	
MTT 121 Machine Tool Theory I ..... 3.0	
MTT 122 Machine Tool Practice I ..... 4.0	
MTT 123 Machine Tool Theory II ..... 3.0	
MTT 124 Machine Tool Practice II ..... 4.0	
MTT 143 Precision Measurement..... 2.0	
MTT 250 Principles of CNC ..... 3.0	
CPT 169 Industrial Computer Applications ..... 3.0	

**SUBTOTAL: 25.0**

**TOTAL CREDIT HOURS: 25.0**

## Computerized Numerical Control Certificate

The CNC certificate is designed for people with a machinist background who desire to learn about the basic operations of CNC (computerized numerical controlled) machinery. Good math and blueprint reading skills are essential for those who would like to study CNC programming. This certificate requires students to write simple CNC programs using the G and M codes to define tool paths and other CNC functions. The student will then program and operate CNC machines. The graduate will have a good working knowledge of CNC and the jobs associated with this type of work.

### REQUIRED COURSE INFORMATION

COURSES	CREDIT HOURS
MAT 170 Algebra, Geometry and Trigonometry I..... 3.0	
MAT 171 Algebra, Geometry and Trigonometry II ..... 3.0	
MTT 120 Machine Tool Print Reading..... 3.0	
MTT 121 Machine Tool Theory I ..... 3.0	
MTT 130 Fundamentals of Geometric Dimensions and Tolerances ..... 2.0	
MTT 143 Precision Measurement..... 2.0	
MTT 251 CNC Operations ..... 3.0	
MTT 253 CNC Programming and Operation..... 3.0	
CPT 169 Industrial Computer Applications ..... 3.0	

**SUBTOTAL: 25.0**

**TOTAL CREDIT HOURS: 25.0**

## Machine Tool CNC Precision Operator Certificate

The certificate teaches the core principles and practices for employment as an entry-level CNC operator.

Students in this program will be introduced to modern practices which include Precision Measurement techniques and the foundational principles of CNC Operations. Students will learn and perfect introductory skills in the programming and daily maintenance of CNC machines. Various types of automated equipment, such as Coordinate Measuring Machines are utilized so that students gain practical experience that will help them obtain gainful employment in industry.

**Note:** This certificate is primarily focused on providing training for the industrial and manufacturing sectors. Students are required to contact their primary advisor before enrolling.

### REQUIRED COURSE INFORMATION

COURSES	CREDIT HOURS
MTT 105 Machine Tool Math Applications.....	3.0
MAT 120 Machine Tool Print Reading.....	3.0
MTT 121 Machine Tool Theory I.....	3.0
MTT 130 Fundamentals of Geometric Dimensions and Tolerances .....	2.0
MTT 143 Precision Measurement.....	2.0
MTT 251 CNC Operations .....	3.0
MTT 253 CNC Programming and Operation.....	3.0

**SUBTOTAL: 19.0**  
**TOTAL CREDIT HOURS: 19.0**

## Precision Metrology Certificate

The Precision Metrology certificate is designed to upgrade or refresh skills for people familiar with measuring systems required in Advanced Manufacturing industries. Working with tolerances on the order of millionths of an inch, Quality Control Inspectors require the knowledge to operate highly sophisticated inspection equipment such as optical comparators, profilometers and CMM (Coordinate Measuring Machine) systems. A good mathematical background and understanding of complex GDT (Geometric Dimensioning & Tolerancing) drawings is also required to determine the exact parameters to be inspected and how to process a part during the inspection sequence. The classes included in this certificate will benefit those with the responsibility to inspect manufactured products and also would be beneficial to any machine operator or shop manager interested in learning new techniques for inspection. The classes will require students to operate CNC equipment

along with all the available inspections tools. A ZEISS Scanning CMM will be the major component of this program along with the available CMM 3D Simulation Software provided by ZEISS. Students will be encouraged to bring samples of personal work to be inspected or 3D CAD drawings used for the simulation software.

### REQUIRED COURSE INFORMATION

COURSES	CREDIT HOURS
CPT 169 Industrial Computer Applications .....	3.0
MTT 120 Machine Tool Print Reading.....	3.0
MTT 130 Fundamentals of Geometric Dimensions and Tolerances .....	2.0
MTT 141 Metals and Heat Treatment .....	3.0
MTT 243 Advanced Dimensional Metrology for Machinists .....	3.0
MTT 270 Operation and Programming of Coordinate Measuring Machines .....	3.0

**SUBTOTAL: 17.0**  
**TOTAL CREDIT HOURS: 17.0**

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