PIEDMONT Technical College
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Machine Tool Technology Curriculum

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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 - MTT3

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.

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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.

Day or Evening Program

FIRST SEMESTER		CREDIT HOURS
MAT 170	Algebra, Geometry and Trigonometry I	3.0
	or approved MAT course	
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 143	Precision Measurement	2.0
SECOND SEMESTER (SPRING)		
MTT 123	Machine Tool Theory II	3.0
MTT 124	Machine Tool Practice II	4.0
MTT 250	Principles of CNC	3.0
ENG 165	Professional Communications	3.0
	or approved ENG course	
SUMMER TERM		
MTT 126	Machine Tool Practice III	4.0
MTT 141	Metals and Heat Treatment	3.0
MTT 161	Machine Tool Maintenance Theory	2.0
	Social/Behavioral Science Requirement	3.0
FOURTH SEMESTER		
MAT 171	Algebra, Geometry and Trigonometry II	3.0
	or approved MAT course	
MTT 130	Fundamentals of Geometric Dimensions and Tolerancing	2.0
MTT 222	Tool and Diemaking Practice I	4.0
MTT 251	CNC Operations	3.0
FIFTH SEMESTER		
CPT 169	Industrial Computer Applications	3.0
MTT 224	Tool and Diemaking Practice II	4.0
MTT 253	CNC Programming and Operation	3.0
	Elective Humanities/Fine Arts	3.0

TOTAL CREDIT HOURS: 65.0

D.A.S., Major in Machine Tool - MTT1

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.

Day or Evening Program

FIRST SEMESTER		CREDIT HOURS
MAT 170	Algebra, Geometry and Trigonometry I *or approved MAT course*	3.0
MTT 120	Machine Tool Printing	3.0
MTT 121	Machine Tool Theory I	3.0
MTT 122	Machine Tool Practice I	4.0
MTT 143	Precision Measurement	2.0

SECOND SEMESTER		
ENG 165	Professional Communications *or approved ENG course*	3.0
MTT 123	Machine Tool Theory II	3.0
MTT 124	Machine Tool Practice II	4.0
MTT 250	Principles of CNC	3.0

SUMMER TERM		
MTT 141	Metals and Heat Treatment	3.0
MTT 126	Machine Tool Practice III	4.0
MTT 161	Machine Tool Maintenance Theory	2.0
	Social/Behavioral Science Requirement	3.0

TOTAL CREDIT HOURS: 40.0

Machine Tool Operator Certificate - MTO7

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.

Day or Evening Program

FIRST SEMESTER		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 143	Precision Measurement	2.0

SECOND SEMESTER		CREDIT HOURS
MTT 123	Machine Tool Theory II	3.0
MTT 124	Machine Tool Practice II	4.0
MTT 250	Principles of CNC	3.0
CPT 169*	Industrial Computer Applications	3.0

TOTAL CREDIT HOURS: 25.0

*May substitute CPT 101 or EGT 151

Computerized Numerical Control Certificate - CNC7

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.

Day or Evening Program

FIRST SEMESTER		CREDIT HOURS
	MAT Requirement[1]	3.0
MTT 120	Machine Tool Print Reading	3.0
MTT 121	Machine Tool Theory I	3.0
MTT 143	Precision Measurements	2.0
MTT 251	CNC Operations	3.0

SECOND SEMESTER		
	MAT Requirement[2]	3.0
MTT 130	Fundamentals of Geometric Dimensions and Tolerances	2.0
MTT 253	CNC Programming and Operation	3.0
CPT 169	Industrial Computer Applications[3]	3.0

TOTAL CREDIT HOURS: 25.0

[1] MAT 170 recommended.
[2] MAT 171 recommended.
[3] May substitute CPT 101 or EGT 151.

Precision Metrology Certificate - PMC6

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.

Day or Evening Program

FIRST SEMESTER[1]		**CREDIT HOURS**
MAT 101	Beginning Algebra	3.0
	or MAT 152 Elementary Algebra	
MTT 130	Fundamentals of Geometric Dimensions and Tolerances	2.0
CPT 169	Industrial Computer Applications	3.0
QAT 215	Applied Quality Concepts	4.0

SECOND SEMESTER		
MAT 120	Probability and Statistics	3.0
	or MAT 170 Algebra, Geometry and Trigonometry	
IMT 170	Statistical Process Control	3.0
MTT 243	Advanced Dimensional Metrology for Machinists	3.0
MTT 250	Principles of CNC[2]	3.0
MTT 270	Operation and Programming of Coordinate Measuring Machines	3.0

TOTAL CREDIT HOURS: 27.0

[1] All classes may not be offered during specified semesters/ask advisor for available classes.

[2] May require some hands on training to be taken at the Lex Walters Campus-Greenwood.

>>> Visit www.ptc.edu/machinetool to learn more.