

MANUFACTURING TECHNOLOGY

OCC's Manufacturing Technology program is designed to train students for entry-level positions as machine operators. Additionally, both beginning students and working machinists can build on their skill and knowledge by completing the requirements for one of the advanced certificates.

The Manufacturing Technology program is divided into four areas: Machinist, Computer Numerical Control (CNC) Operator, CNC Programmer, and Tool Maker. All four programs follow sequential plans which spin off from the core machinist program. After completing the machinist program in two semesters, the student can take the classes required for one of the more advanced certificates. The student who completes the machinist program also satisfies the major requirements for the Associate in Science degree.

Program Outcomes

Upon successful completion of the Manufacturing Technology Program students will be able to:

1. Machine precision manufactured parts using conventional lathes and milling machines and perform necessary measurements.
2. Set-up and operate CNC Lathes and Milling Machines.
3. Write part machine programs for controlling CNC lathes and milling machines.
4. Manufacture precision tooling for Dies, Molds, and Prototype tooling.
5. Write advanced CAD/CAM programs for CNC LATHE and Milling Machines.

MACHINIST

The Machinist certificate program trains students for positions as entry-level operators, which often are the first manufacturing jobs for industrial employees. This certificate program provides the skill and knowledge necessary for job candidates to become successful wage earners. This program also comprises the core courses for the more advanced certificates.

CERTIFICATE OF ACHIEVEMENT

Required Courses

Course			Units
FALL			
Intro to Machine Shop	MACH	A100	(3)
Lathe	MACH	A105	(5)
Blueprint Reading	MACH	A120	(3)
Computations for Machinists	MACH	A121	(3)
SPRING			
Milling Machine	MACH	A110	(5)
Production Machining Tech	MACH	A115	(3)
Total:			(22)

ASSOCIATE DEGREE

Complete the Certificate of Achievement and Associate in Science Graduation Requirements as outlined in the Graduation Requirements section of the catalog.

CNC MACHINE OPERATOR

The CNC Machine Operator certificate enhances the skills of students who have earned the Machinist certificate by providing that student with CNC machine operating skills and manual programming skills. The courses required for earning this certificate are designed to make the machine operator capable of setting up and manually programming a CNC machine tool. The CNC Machine Operator Professional Upgrade Certificate is specifically for the returning student with on-the-job machining experience.

CERTIFICATE OF ACHIEVEMENT

Required prerequisite:

Machinist Certificate of Achievement (22)

Required Courses

Course			Units
FALL			
CNC Mach Operation 1	MACH	A125	(3)
SPRING			
CNC Mach Operation 2	MACH	A126	(2)
Intro to CNC Programming	MACH	A130	(4)
Total:			(9)
Total:			(31)

ASSOCIATE DEGREE

Complete the Certificate of Achievement and Associate in Science Graduation Requirements as outlined in the Graduation Requirements section of the catalog.

CNC MACHINE PROGRAMMER

The CNC Machine Programmer certificate includes courses designed to upgrade the skills and knowledge of the machinist or the CNC machine operator to the level of the CNC machine programmer. If you are a machinist and have minimal experience with CNC machines or machine language programming, you will first want to complete the CNC Machine Operator Professional Upgrade Certificate. If you have both machining experience and CNC experience, the software used for the Machine Technology A133 and A134 courses provides excellent experiences in computer-assisted CNC programming. All of our programming courses require the use of a personal-type computer. If you have no computer experience, we strongly suggest you enroll in a basic computer use type course first (Computer & High Technology A100 or Computer Information Systems A100).

CERTIFICATE OF ACHIEVEMENT

Required prerequisite:

Machinist Certificate of Achievement (22)

Required Courses

Course			Units
FALL			
CNC Mach Operation 1	MACH	A125	(3)
SPRING			
CNC Mach Operation 2	MACH	A126	(2)
CNC Programming-Mastercam 1	MACH	A133	(3)
SUMMER			
Mastercam Solids	MACH	A142	(2)
FALL			
CNC Programming-Mastercam 2	MACH	A134	(3)
INTERSESSION			
Mastercam Lathe	MACH	A141	(1.5)
			(14.5)
Total:			(36.5)

ASSOCIATE DEGREE

Complete the Certificate of Achievement and Associate in Science Graduation Requirements as outlined in the Graduation Requirements section of the catalog.

TOOLING

Earning the Tooling certificate upgrades the skills of the machinist to the point required for profitable employment as an entry-level tool maker, a die maker, or a mold maker. As well as other subjects that must be learned by the beginning tool maker, the Tooling certificate program includes courses in metallurgy, tool and cutter grinding, and welding tooling.

CERTIFICATE OF ACHIEVEMENT

Required Courses

Course			Units
Intro to Machine Shop	MACH	A100	(3)
Lathe	MACH	A105	(5)
Milling Machine	MACH	A110	(5)
Production Machining Tech	MACH	A115	(3)
Blueprint Reading	MACH	A120	(3)
Computations for Machinists	MACH	A121	(3)
Numerical Control Machine Oprtn	MACH	A125	(3)
Intro to Numerical Control & Manual Programming	MACH	A130	(4)
Tool & Cutter Grinding	MACH	A150	(2.5)
Dimensioning & Tolerancing	MACH	A175	(3)
Elementary Metallurgy	MACH	A190	(2)
Tooling	MACH	A200	(2.5)
Arc & Oxy-acetylene Welding	WELD	A100	(3)
Total:			(42)

ASSOCIATE DEGREE

Complete the Certificate of Achievement and Associate in Science Graduation Requirements as outlined in the Graduation Requirements section of the catalog.

MACHINE TECHNOLOGY

PROFESSIONAL UPGRADE CERTIFICATES

CNC OPERATOR

This Professional Upgrade Certificate is designed for students who are already machinists. Before starting on this plan you should be able to set up and operate both conventional lathes and mills. You should be able to read blueprints and use all common machine shop measuring tools. If you have a deficiency in these areas, please refer back to the basic machining courses found in the Machinist certificate.

CERTIFICATE OF SPECIALIZATION

Required Courses

Course			Units
FALL			
CNC Mach Operation 1	MACH	A125	(3)
Intro to Numerical Control & Manual Programming	MACH	A130	(4)
SPRING			
CNC Mach Operation 2	MACH	A126	(2)
			Total: (9)

CNC PROGRAMMER

This Professional Upgrade Certificate is designed to upgrade the skills and knowledge of the machinist or the CNC machine operator to the level of the CNC machine programmer. If you are a machinist and have minimal experience with CNC machines or machine language programming, you will first want to complete the CNC operator upgrade certificate. If you have both machining experience and CNC experience, the software used for the Machine Technology A133 and A134 courses provide excellent experiences in computer-assisted CNC programming. All of our programming courses require the use of a personal computer. If you have no computer experience, we strongly suggest you enroll in a basic computer use course first (Computer & High Technology A100 or Computer Information Systems A100).

Note: Two unit contract education course requirements must be designed in cooperation with the student and the instructor, or the student, instructor, and employer. This course will require the student to complete a project from beginning to end, to include all necessary paperwork, fixturing, programming, and machining of the final part, or the student may take Machine Technology A126, Advanced CNC Machine Operation.

CONTINUED NEXT PAGE

CERTIFICATE OF SPECIALIZATION

Required Courses

Course			Units
CNC Prog-Mastercam 1	MACH	A133	(3)
CNC Prog-Mastercam 2	MACH	A134	(3)
Contract Education (Or)			(2)
CNC Mach Operation 2	MACH	A126	
Mastercam Lathe	MACH	A141	(1.5)
Mastercam Solids	MACH	A142	(2)
Total:			(11.5)

Program Outcomes

Upon successful completion of the certificate of achievement in management and leadership studies, graduates will be able to:

1. Function effectively in a leadership or management role using the skills, principles, and tools they have acquired.
2. Apply the leadership and management principles they have learned in their personal and/or organizational lives.
3. Distinguish between the qualities of effective and ineffective leaders and managers.
4. Analyze the ethical dimensions of effective leaders and managers in everyday conduct and decision making.
5. Demonstrate effective written and/or oral skills.

MANAGEMENT

MANAGEMENT AND LEADERSHIP STUDIES

The Management and Leadership Studies certificate program is designed to build and/or upgrade skills in leading and managing people while enhancing individual and organizational effectiveness within the workplace. Courses emphasize leading, organizing, planning, communicating, training, and controlling.

CERTIFICATE OF ACHIEVEMENT

Required Courses

Course			Units
	FALL		
Intro to Business (Or)	BUS	A100	(3)
Honors Intro to Bus	BUS	A100H	
Intro to Info Sys & Appl	CIS	A100	(3)
Applied Management	MGMT	A100	(3)
Interpersonal Communication	CMST	A100	(3)

