

# Machine Technology 360

Certificate (C181)

Technical Requirements ..... 30

**Total Credits .....30**

## Program Description

This certificate provides students with introductory courses to production and machining technology to obtain basic skills for other manufacturing career pathways. Training prepares the graduate for an entry-level machinist production position. Students engage in technical math, introductory computer skills, print interpretation, manufacturing processes, machine tool theory and lab, quality control, maintenance and safety. The Minnesota Department of Employment and Economic Development long-term projections show the need for a number of replacement workers in the machinist occupation. Advanced manufacturing continues to be considered a high-demand, high-pay industry in Minnesota. The certificate program yields marketable skills and knowledge to entry-level employees.

## Program Outcomes

By completing this program, students will achieve the following learning outcomes:

- Gain a general knowledge of production technology processes;
- Gain knowledge and understanding of interpreting production prints;
- Apply technical mathematics skills to production processes;
- Demonstrate basic computer skills;
- Gain knowledge and understanding of machine tool print reading, machine tool technology theory and lab principles, machining math, an introduction to computer numerical control, and geometric dimensioning and tolerancing.

## Career Opportunities

Production machinists work primarily in the production of large volumes of one single part, particularly parts that require strict adherence to specs and involve many complicated operations. Machinists decide what cutting tool is used and the speed the part is made, as well as the feed rate, while the programmer is in charge of setting up the path the cut will follow. Career titles may include:

machine tool operator, tool operator, production worker, machine setter or tender.

## Program Course Requirements

CMAE 1502	Technical Mathematics .....	3 cr
CMAE 1506	Introduction to Computer Applications .....	2 cr
CMAE 1510	Print Reading .....	2 cr
CMAE 1514	MSSC Safety .....	2 cr
CMAE 1518	MSSC Manufacturing Processes and Production .....	2 cr
CMAE 1522	MSSC Quality Practice and Measurement .....	2 cr
CMAE 1526	MSSC Maintenance Awareness .....	2 cr
CMAE 1530	Machining Math .....	2 cr
CMAE 1532	Machine Tool Print Reading .....	2 cr
CMAE 1534	Machine Tool Technology Theory .....	2 cr
CMAE 1536	Machine Tool Technology Lab I .....	2 cr
CMAE 1538	Machine Tool Technology Lab II .....	2 cr
CMAE 1540	Introduction to CNC .....	3 cr
CMAE 1542	Geometric Dimensioning and Tolerancing .....	2 cr

## GRADUATION REQUIREMENT - 30 CREDITS

*\*Denotes Prerequisites*

## Semester Course Requirements

Individual semester plans are determined between instructor or advisor and student to best meet the needs of the student.

## Transfer Opportunities

This certificate is offered collaboratively with Northland Community and Technical College, Northwest Technical College, Minneapolis Community and Technical College, Pine Technical College, Riverland Community College, St. Cloud Technical and Community College, and St. Paul College. Courses are transferable within all the listed colleges.

## Course Prerequisites

Some courses may require appropriate test scores or completion of basic math, basic English and/or reading courses with a “C” or better. CLC utilizes a multiple measure approach for placement which may include high school MCA, SAT, ACT scores in addition to high school GPAs. For insurance purposes, internships may require that students be 18 years old.

## Graduation Requirements

In addition to the program requirements, students must meet the following conditions in order to graduate:

1. College Cumulative GPA Requirement: cumulative grade point average (GPA) of credits attempted and completed at CLC must be at least 2.0;
2. College Technical Core GPA Requirement: cumulative GPA of credits attempted and completed towards the technical core of the diploma or degree must be at least 2.0;
3. Residency Requirement: students must complete 25% of their credits at Central Lakes College.