

Machine Operations

Diploma (D184)

Required Courses

ENGL 1422	Practical Writing (Goals 1,2)	3 cr
MATH 1500**	Applied MATH OR	
Goal 4 MATH Course**	.....	3 cr
MTTS 1110	Principles of Machine Operations I.....	2 cr
MTTS 1111*	Principles of Machine Operations II.....	2 cr
MTTS 1120	Machine Operations I.....	3 cr
MTTS 1121	Machine Operations II.....	3 cr
MTTS 1122*	Machine Operations III.....	3 cr
MTTS 1124	Introduction to Engineering Graphics	2 cr
MTTS 1130	Print Reading	2 cr
MTTS 1134*	CNC Operations	3 cr
MTTS 1135	CNC Programming and Process Planning ..	2 cr
MTTS 1137	Grinding I.....	1 cr
RAST 1109	Computers in Industry.....	2 cr
RAST 1110	Introduction to Manufacturing.....	2 cr

**Denotes Prerequisites*

***Take MATH 1500 if on the diploma path. Take a Goal 4 MATH course if on the AAS path.*

GRADUATION REQUIREMENT - 33 CREDITS

Description

The Machine Operations Diploma program at Central Lakes College provides a comprehensive foundation to get you started with standard Computer Numerical Controlled (CNC) machining skills. Machinists are suited to work in machine shops where design, basic CNC setup, milling, turning, grinding, measurement and assembly skills are needed. Emphasis on shop safety, precision, and efficiency are valued. Hands-on projects are machined and assembled in a state-of-the art machine shop to provide a practical experience. The Machine Operations diploma you earn from CLC will signify your competency with the machining skills necessary for multiple career opportunities.

Outcomes

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

- Create mechanical drawings with Computer Aided Design (CAD) software;
- Determine proper fixturing to safely machine multiple projects;
- Anticipate which tooling is best suited to perform milling and turning operations;
- Program a CNC using standard coding;
- Discover how to safely secure components for precision grinding operations; and
- Transfer knowledge from prior assignments to create components for an assembly.

Pre-Program Requirements

Some courses may require students to meet College Placement Levels in reading, writing, and/or math. See an advisor for more information.

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:

- College Cumulative GPA Requirement: cumulative grade point average (GPA) of credits attempted and completed at CLC must be at least 2.0;
- 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;
- Residency Requirement: students must complete 25% of their credits at Central Lakes College.

Career & Transfer

Machine operators manufacture a wide variety of components. Skilled machine operators are needed to produce complex components to supply manufacturing facilities. Their work keeps factories productive, ensuring the high quality of the final product. The machine operator is often responsible for performing entry-level setup using standard procedures. As a machinist, you will be responsible for setup, operation, and quality control of machined parts. To advance in this field, machine operators must gain proficiency with computer-aided machining (CAM) and advanced CNC machining skills.

Academic Plan

Semester One (17 credits)

MATH 1500**	Applied MATH OR	
Goal 4 MATH Course**	.....	3 cr
MTTS 1110	Principles of Machine Operations I	.....2 cr
MTTS 1120	Machine Operations I	.....3 cr
MTTS 1121	Machine Operations II	.....3 cr
MTTS 1130	Print Reading	.....2 cr
RAST 1109	Computers in Industry	.....2 cr
RAST 1110	Intro to Manufacturing	.....2 cr

Semester Two (16 credits)

ENGL 1422	Practical Writing (Goals 1,2)	.....3 cr
MTTS 1111*	Principles of Machine Operations II	.....2 cr
MTTS 1122*	Machine Operations III	.....3 cr
MTTS 1124	Introduction to Engineering Graphics	.....2 cr
MTTS 1134*	CNC Operations	.....3 cr
MTTS 1135	CNC Programming & Process Planning	.....2 cr
MTTS 1137	Grinding I	.....1 cr