

### Program Information

The Anoka Technical College Advanced CNC Machine Technology diploma is a 64-credit program that includes technical and general education components. The career major prepares students to write and edit CNC programs, perform complex setups, basic troubleshooting of machine problems, cycle time reduction practices, fixture design and building, recognize areas for process improvements and operate the following equipment: manual lathes, drills, mills, grinders, CNC mills, CNC lathes, CNC wire EDM and CNC sinker EDM, coordinate measuring machine, CAD/CAM and 4&5 axis CNC mills.

Program graduates are skilled in the areas of CNC programming, parametric programming, basic troubleshooting of machine problems, cycle time reduction practices, fixture design and building, blueprint reading, GD&T, statistical process control, lean manufacturing, math, inspection and the correct sequence of operation required.

Those employed in this position are expected to write and edit CNC programs, perform complex setups, basic troubleshoot of machine problems, cycle time reduction practices, fixture design and building and recognize areas for process improvements on manual lathes, drills, mills, grinders, CNC mills, CNC lathes, CNC wire EDM and CNC sinker EDM, coordinate measuring machine and CAD/CAM. Employees are also expected to invoke lean manufacturing process and practices.

The CNC Manufacturing Technology program provides the skills for trade entry plus the possibility to pursue a Bachelor of Arts (BA) degree with cooperating colleges and universities.

### Program Learning Outcomes

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

1. Write and edit CNC programs
2. Perform complex setups
3. Basic troubleshooting of machine problems
4. Cycle time reduction practices
5. Fixture design and building
6. Recognize areas for process improvements

### Course Prerequisites

Although no prior knowledge or experience is necessary to succeed in this program, a background in shop math and algebra, mechanical drafting, machine shop and mechanical skills can be helpful.

Some courses may require appropriate test score or completion of basic math, basic English and/or reading courses with a “C” or better.

### Graduation Requirements

All Anoka Technical College students seeking an Associate in Applied Science (AAS), diploma, or certificate must meet the cumulative grade point average (GPA) of 2.0 or higher.

### Transfer Opportunities

To see how credits from this program may transfer into other Anoka Technical College programs or into a program at another college, visit:

- [Minnesota Transfer](http://www.mntransfer.org/students/plan/s_agreements.php?numResults=25&archive=false&from_inst=70&from_prog=&to_inst=&Search=Search): (www.mntransfer.org/students/plan/s\_agreements.php?numResults=25&archive=false&from\_inst=70&from\_prog=&to\_inst=&Search=Search)
- [Anoka Technical College transfer student](http://www.anokatech.edu/BecomeStudent/Transfers.aspx) (www.anokatech.edu/BecomeStudent/Transfers.aspx)

### Industry Information

The machinist is a skilled metal worker who produces metal parts by using machine tools and hand tools. Training and experience enable the machinist to plan and carry through all the operations needed to turn out a finished machine product and to switch readily from one kind of product to another. The machinist’s background and knowledge enables him/her to turn a block of metal into an intricate, precise part.

All options are an art as well as a skill, and are considered to be demanding occupations. There is a great variety in the construction of dies and molds, depending on the design of a part, the type of materials used, the ingenuity of the designer, and the knowledge and skill of the die and mold maker, who must machine intricate components of various tooling to tolerances expressed in fractions of one-thousandths of an inch.

### Wages/Outlook/Advancement

Wage information is available from the [Minnesota Department of Employment and Economic Development](https://mn.gov/deed/job-seekers/job-outlook/) (https://mn.gov/deed/job-seekers/job-outlook/).

### Gainful Employment

Follow this link for a [Gainful Employment Report](#).

### Technical Education: 64 Credits

<input type="checkbox"/> MACH 1101 Milling .....	4
<input type="checkbox"/> MACH 1106 Lathe .....	3
<input type="checkbox"/> MACH 1121 Metrology .....	2
<input type="checkbox"/> MACH 1132 Blueprint Reading I .....	3
<input type="checkbox"/> MACH 1140 CAD I .....	1
<input type="checkbox"/> MACH 1171 Math for Machinist I .....	3
<input type="checkbox"/> MACH 1200 Advanced Machining .....	3
<input type="checkbox"/> MACH 1220 Grinding .....	2
<input type="checkbox"/> MACH 1231 Blueprint Design/ CAD II .....	1
<input type="checkbox"/> MACH 1240 Geometric Dimensioning & Tolerancing .....	3
<input type="checkbox"/> MACH 1251 CNC Machining .....	3
<input type="checkbox"/> MACH 1261 CNC Programming I .....	3
<input type="checkbox"/> MACH 1275 Quality Standard .....	1
<input type="checkbox"/> MACH 2310 CNC Milling .....	3
<input type="checkbox"/> MACH 2320 CNC Turning .....	3
<input type="checkbox"/> MACH 2331 CAM .....	1



2018-2019

# Advanced CNC Machine Technology

Diploma

- MACH 2340 CNC Programming II ..... 2
- MACH 2351 Mold/Die making Theory ..... 3
- MACH 2360 Fixture and Tooling ..... 4
- MACH 2411 Tool and Cutter Grinding ..... 2
- MACH 2420 EDM Machining ..... 2
- MACH 2435 Swiss Machining ..... 2
- MACH 2440 CNC Programming III ..... 1
- MACH 2451 CNC Design and Manufacture ..... 3
- MACH 2462 Multi-Axis Milling ..... 3
- MACH 2472 Multi-Axis Turning ..... 3

*Also see: CNC Design & Manufacturing Technology AAS and Machine Technology Certificate 1, 2, and 3*

### Start Dates

Fall Semester ..... August  
 Spring Semester ..... January

### Faculty Contact

[Jesse Oldenburg](#) ..... 763-576-4065  
[Matt Rogers](#) ..... 763-576-4088  
[Brendon Paulson](#) ..... 763-576-4243  
[Jerry Showalter](#) ..... 763-576-4043

For information on how to apply, to schedule a tour, or for service during summer hours, contact Enrollment Services at 763-576-7710 or [EnrollmentServices@anokatech.edu](mailto:EnrollmentServices@anokatech.edu)

## Sample Program Sequence

Full Time

		1st YEAR	2nd YEAR
	<b>First Semester</b>	MACH 1101 ..... 4 MACH 1106 ..... 3 MACH 1121 ..... 2 MACH 1132 ..... 3 MACH 1140 ..... 1 MACH 1171 ..... 3 <b>TOTAL ..... 16</b>	<b>Second Semester</b> MACH 1200 ..... 3 MACH 1220 ..... 2 MACH 1231 ..... 1 MACH 1240 ..... 3 MACH 1251 ..... 3 MACH 1261 ..... 3 MACH 1275 ..... 1 <b>TOTAL ..... 16</b>
	<b>Third Semester</b>	MACH 2310 ..... 3 MACH 2320 ..... 3 MACH 2331 ..... 1 MACH 2340 ..... 2 MACH 2351 ..... 3 MACH 2360 ..... 4 <b>TOTAL ..... 16</b>	<b>Forth Semester</b> MACH 2410 ..... 2 MACH 2420 ..... 2 MACH 2435 ..... 2 MACH 2440 ..... 1 MACH 2451 ..... 3 MACH 2462 ..... 3 MACH 2472 ..... 3 <b>TOTAL ..... 16</b>