

# Machine Tool Technology

- ◆ Training for Machinists. Curriculum includes CNC Programming, Manual Machining and CAD/CAM Software.



# The Industrial Technology Center

- The MTT Program is Housed on the Oregon City Campus in the New Industrial Technology Center



# Machine Tool Technology

- The Program Has Undergone a Significant Overhaul Which Will be Implemented Fall of 2021
- CNC is Introduced in the First Term and Progresses in Parallel with Traditional Machining
- Six New Advanced Courses
- Traditional/Cohort Model (no concurrent classes)

# MTT Program Changes

The machine tool technology (MTT) program has undergone a long-awaited overhaul over the past year, and we will see these program changes starting in the fall of 2021. These changes are necessary to first, preserve our commitment to providing the right skills for student and business success, and second, to meet our obligation as stewards of public resources. Many dozens of companies and individuals have given input on this curriculum. We believe it will lead to a faster pathway to employment due to an early focus on CNC machining, substantially reduced cost through efficiency, and higher graduation rates through case management and group cohesion.

The highlight of the program redesign centers around increased attention to CNC machining. We have moved our introductory CNC course from the fourth term up to the first term and changed the focus to setup and operation of CNC lathes and mills. We realized that students are often only able to stay in the program for one or two terms before life and work pressures pull them away. We want everyone to leave this program with basic machine operation skills that have been delineated and requested by employers. It is important that a student can become self-sufficient after even one term. To this end they will earn a CNC Operator Certificate as they complete the first 18 credits of the program. Over the last four years, we have placed approximately 200 students with this credential. Of course, this can be just the beginning of their training.

During the first year of the program, students take a traditional machining course and a CNC machining course each of the three terms. The learning objectives and projects in these courses are carefully coordinated to allow students to learn machining processes through multiple modes and technologies. Student are also introduced to CAD/CAM software during the first year which reflects a reduced emphasis on manual programming of CNC machine tools. The number of manual machining hours have been reduced to make room for advanced courses during the second year.

The new program introduces six new courses which are all seen in the second year and focus on multi-axis machining, advanced programming and lean manufacturing.



# Machine Tool Technology

The program will also see some structural changes in course scheduling. We are moving back to traditional model where sequential courses are offered at standard intervals usually starting in the fall. This is similar to what you would see in most college programs. We still have a number of stand-alone courses which will be offered two to four times annually in topics such as print reading, computer literacy, and safety.

We are committed to serving the community by offering two entry points into the core machining sequences during the year. The fall term entry point will be offered during the daytime and continue through spring. A second entry point will begin during winter term in the evenings and continue through summer. Students who are able to continue on to the second year of the program will form a cohort starting in the fall of the following year.

We recognize that not every student will be able to make a full-time commitment. Students can still find a part-time schedule that will have a lower impact on home and work life. The program advisors are a critical resources for planning such a program.

In the past, our manual machining program was extremely flexible, and students were able to take any manual machining course every term during both the morning and evening. This required two qualified instructors to manage the concurrent, variable credit scheme where up to five different courses were taught concurrently. You would be right to imagine that this was too expensive to continue. We realize that this transition may inconvenience or delay some students, however, your program advisor will provide guidance on completing your goals as smoothly and quickly as is possible.

# Sequence

Fall 2021

Year One, Fall Start  
Daytime Classes

Year One, Winter Start  
Evening Classes

Fall 2022

Year Two, Fall Start  
Daytime Classes

- ◆ The Machine Tool Technology Program Offers Two Entry Points During the Year: The Daytime Cohort Starts in the Fall and an Evening Cohort Starts in the Winter

## Machine Tool Technology (MTT)

### Year 1 Certificate of Completion, MTT

CNC Operator Certificate					
Term 1 Fall or Winter		Term 2 Winter or Spring		Term 3 Spring or Summer	
<b>MFG-104 Print Reading</b>	<b>3</b>	<b>MTH-80</b>	<b>3</b>		
<b>MTH-50</b>	<b>4</b>	<b>MFG-109 Computer Lit.</b>	<b>3</b>	<b>WR-101</b>	<b>3</b>
<b>MFG-107 Health/Safety</b>	<b>3</b>	<b>Human Relations</b>	<b>3</b>	<b>MTT-113 Manual Mach III</b>	<b>5</b>
<b>MTT-111 Manual Mach I</b>	<b>5</b>	<b>MTT-112 Manual Mach II</b>	<b>5</b>	<b>MTT123 CNC III</b>	<b>4</b>
<b>MTT-121 CNC I</b>	<b>3</b>	<b>MTT-122 CNC II</b>	<b>4</b>	<b>MTT-141 CAD/CAM I</b>	<b>4</b>
<b>Sub Total</b>	<b>18</b>		<b>18</b>		<b>16</b>
				<b>Total</b>	<b>52</b>

### Year 2 AAS, MTT

Term 4 Fall		Term 5 Winter		Term 6 Spring	
<b>MTT-241 CAD/CAM II</b>	<b>4</b>	<b>MTT-268 Capstone</b>	<b>3</b>	<b>MTT-269 Capstone</b>	<b>3</b>
<b>MFG-106 GD&amp;T</b>	<b>3</b>	<b>MTT-242 CAD/CAM III</b>	<b>4</b>	<b>MTT-254 Mill/Turn</b>	<b>3</b>
<b>MTT-252 Macros and Probing</b>	<b>3</b>	<b>MTT-253 5-Axis</b>	<b>3</b>	<b>MFG-221 Materials Sci.</b>	<b>3</b>
<b>MFG-218 Lean/Quality</b>	<b>3</b>	<b>MFG-264 CMM Setup &amp; Operation</b>	<b>2</b>	<b>HD-209 or CWE</b>	<b>3</b>
<b>Technical Elective</b>	<b>3</b>	<b>Technical Elective</b>	<b>3</b>	<b>Technical Elective</b>	<b>3</b>
<b>Sub Total</b>	<b>16</b>		<b>15</b>		<b>15</b>
				<b>TOTAL</b>	<b>98</b>

# Essential Information

- ◆ Classes begin in the fall for the daytime cohort. Follow the prescribed course schedule as it appears in the catalog (and previous slide).
- ◆ Program Prerequisites: Have completed MTH-20 and be ready to start MTH-50. Test into Writing-101 or higher.
- ◆ Prerequisites for advanced CNC classes will be enforced. Printreading, Manual Machining I, CNC I and Math 50 are required for CNC II. Waivers might be available if you have certain work experience.
- ◆ The entire first-year sequence starts again in the winter term and these classes are offered during the evening.
- ◆ Part-time students with no experience should take the manual machining sequence first. See your advisor.