



MOLINE-COAL VALLEY
SCHOOL DISTRICT



CNC Manufacturing Career Pathway

BACKGROUND

The nation, and particularly our manufacturing-heavy community, are faced with an aging skilled worker population and too few programs to develop new talent. Arconic Foundation Treasurer Ryan Kish noted at a national manufacturing summit that starting with early education and practical application of skills can help the industry and provide a tremendous career opportunity for our students. "All we're doing right now [as an industry] is fighting over the same scarce talent. Take the opportunity to make an investment in early STEM education to build the pipeline, so you're not dealing with the same problem in 5 and 10 years."

The Moline-Coal Valley School District and local manufacturing industry partners are doing just that by providing school-based coursework, coupled with industry-based on the job training through a Federal Department of Labor paid apprenticeship opportunity.

FACTS

In 2017, there were 12,077 manufacturing firms in the state of Illinois, and in 2019 the average annual compensation in the field of manufacturing was over \$90,000*. Manufacturers employ 9.74% of the workforce in the state. According to Future Ready Iowa, 91% of apprentices who complete an apprenticeship are still employed nine months later.

*According to the National Association of Manufacturers' website at <https://www.nam.org/workforce/>

Program Purpose

- To identify, train, and develop high school students interested in a manufacturing career;
- To collaborate with local industry leaders and the Federal Department of Labor in training standards and curriculum development, intent on providing the highest standard of industry employment preparation
- To create a pipeline of Moline-Coal Valley graduates to be hired within the Quad City community
- To serve as a conduit for our Quad City community business partners in need of a skilled and diverse employee talent pool

Program Benefits

- Training, experience, and employability in a high-demand field
- Nationally-recognized certification upon completion of the DOL apprenticeship
- Acquisition of dual and articulated credit toward an AA degree from Black Hawk College
- Paid work from the summer following 11th grade through apprenticeship completion
- Fast-tracking the development of a lucrative and diverse career field

CNC Manufacturing Curriculum Overview

Sophomore Courses: Machine Tech

MACHINE TECHNOLOGY 1 covers the units in technology, management, materials and processes, research and development, production, marketing and service. Machine Technology will introduce the student to the basic concepts of manufacturing products of metal and will expose the students to the lathe, milling machine, drill press, grinders and the foundry. Learning will take place through the construction of products along with lectures, demonstrations, and visual aids.

MACHINE TECHNOLOGY 2 encourages the development of greater skills and understanding of machine metal working processes. More complex set-ups, measuring and machining will take place in the laboratory setting and help prepare the student whose occupational goals involve the manufacturing industry.

Junior Courses: CNC Manufacturing

CNC MACHINE MANUFACTURING 1 introduces students to computer numeric control (CNC) machines used in manufacturing today. Students will learn the foundation of G and M coding used to create basic parts on the CNC mill and CNC lathe. This course will reinforce the understanding of safety, blueprint reading, tolerancing, maintenance, and precision measuring.

CNC MACHINE MANUFACTURING 2 class allows the students to gain a greater understanding of computer numerical control machines. The students will learn advanced application of G and M coding for more complex parts to be created on the CNC lathe and CNC mill, as well as set-up, offsets, and inspection of the part being produced. The students will also seek shadowing opportunities with local manufacturing CNC operators and prepare to do the CNC task required daily at local manufacturing companies. Throughout this course, students will prepare, practice, and complete the application & interviewing process for those seeking apprenticeships, which begin the summer after 11th.

Senior Course: Advanced Manufacturing

CNC ADVANCED MANUFACTURING allows the students to gain a greater understanding of CNC lathes and CNC vertical milling machines in class, while they apply those skills in the industry. The student will learn advanced applications of G and M coding for more complex parts to be created on CNC lathes and CNC Mills, as well as set-ups, offsetting, maintenance, mass production, and inspection of the part being produced. Apprenticeship will carry through this course.

Apprenticeship

The DOL paid apprenticeship focuses on applying skills learned at MHS to the factory setting. Instruction for this course will take place outside the school setting at an industry location in the greater Quad City area. Students will be selected for this course through an application and pairing process near the end of the junior year, and on-the-job work experience and training will begin as a full-time summer job between the junior and senior years. This placement will continue through the senior year for course credit. Students should anticipate the full apprenticeship experience to take 3-4 years beyond high school graduation to complete.

Our Partners

