Your Student's Head Start on Career Goals and College Aspirations

MANUFACTURING–PRODUCTION PATHWAY

The Destinations **Production Pathway** prepares students to operate a variety of machine tools; fabricate and modify machine parts; and use electrical, hydraulic, and pneumatic technologies.

SAMPLE COURSE PROGRESSION

4-YEAR PLAN

9TH	10TH	11TH	12TH
IT and Manufacturing Explorations	Fundamentals of Manufacturing Manufacturing Systems	Manufacturing Product Development Lean Manufacturing and Automation	Manufacturing Process Development I Manufacturing Process Development 2

3-YEAR PLAN*

	IT and Manufacturing Explorations Fundamentals of Manufacturing	Manufacturing Systems Manufacturing Product Development	Lean Manufacturing and Automation Manufacturing Process Development

Possible Careers

- Computer-Controlled Machine Tool Operator
- Machinist
- Boiler Operator
- Machine Maintenance Worker
- Welder

Industry-Recognized Credentials

Destinations programs prepare students for the:

- National Occupational Competency Testing Institute Precision Machining Exam
- NIMS Computer Numerical Control (CNC) Machine Operator Certification

Success Beyond High School

Destinations graduates may pursue:

- Mechanic certificate
- Associate's degree in applied sciences
- Bachelor's degree in industrial technology

DID YOU KNOW?**

WELDERS CAN EARN

$36,300/YR

6% JOB GROWTH
EXPECTED BY 2022

MACHINISTS CAN EARN

$40,910/YR

7% JOB GROWTH
EXPECTED BY 2022

*Program may be accelerated depending on student goals and abilities and course availability. **Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook, 2014–15 Edition.*

MANUFACTURING PRODUCTION PATHWAY

COURSE DESCRIPTIONS

IT AND MANUFACTURING EXPLORATIONS

This course is designed as an exploration of two career clusters. Students receive an introduction to these fields so they can better assess which pathway to pursue. The first half of the course introduces the essentials of web design, from planning page layouts to publishing a complete site to the web. Students learn how to use HTML to design their own web pages. The course covers basic HTML tags for formatting text as well as more advanced tags. Through real-world design scenarios and hands-on projects, students create compelling, usable websites using the latest suite of free tools. The second half of the course introduces engineering and advanced manufacturing.

FUNDAMENTALS OF MANUFACTURING

In this course, students develop foundational skills in basic mechanisms and robotics to include: parts identification and applications of robotic arms in manufacturing, Computer Aided Design (CAD) with SpectraCAD, Computer Numerical Control (CNC) machining, and foundational employability skills.

MANUFACTURING SYSTEMS

In this course, students develop skills in automated systems, basic robot programs, Computer Aided Manufacturing (CAM) with SpectraCAM Milling, and the CAD/CAM process of developing Computer Numerical Control (CNC) milling programs. Students also work with fluid power (pneumatics) as used in manufacturing systems and hand tools, and are introduced to quality control (QC) and skills measurement.

MANUFACTURING PRODUCT DEVELOPMENT

In this course, students explore rapid prototyping, Computer Aided Manufacturing (CAM) with SpectraCAM Turning, and the CAD/CAM process of developing Computer Numerical Control (CNC) turning programs. Students also begin advanced robotics programing with the ER4u robot and gain exposure to power tools and math for technicians.

LEAN MANUFACTURING AND AUTOMATION

In this course, students develop an understanding of lean manufacturing, skills in robotics, material handling, and electrical systems, while continuing with projects in Computer Numerical Control (CNC) milling and turning. The course also includes foundational skills in math for technicians and blueprint reading.

MANUFACTURING PROCESS DEVELOPMENT 1 AND 2

In these courses, students develop skills in manufacturing processes development through research projects on current trends and applications in the world of manufacturing. Students also develop virtual projects in CAD/CAM/CNC. They work with flexible manufacturing systems in a virtual environment, as well as with robotics and material handling as an integral element of manufacturing processes. The courses address the foundational skill: Industrial Safety Lock Out Tag Out. Additionally, students develop skills with projects in advanced flexible manufacturing systems with the ER4u robot, CNC machines in a virtual environment, and automated systems with SkillsUSA robotics projects (RAT). Students participate in research projects in manufacturing methods and applications and prepare for certification exams.