



MANUFACTURING

A GUIDE TO PURSUING YOUR CAREER PATH

MANUFACTURING >>>

The Manufacturing cluster uses your skills in planning and organization along with your love of technology, engineering and design to work in careers processing materials into products. Careers also include related professional and technical support activities such as production planning, production design, maintenance, and engineering.

The employment of welders, cutters, solderers, and brazers is expected to grow. New power generation facilities and natural gas pipelines also are being built, which will increase the need for these professionals. More machinists and tool and die makers also will be needed in the coming years. Modern manufacturing includes all intermediate processes required for the production and integration of a product's components. Some industries, such as semiconductor and steel manufacturers, use the term fabrication instead.

HIGH SCHOOL PATHWAY CLASSES >>>

1 FOUNDATIONS OF MANUFACTURING & MATERIALS SCIENCE is the introductory course for the Manufacturing Pathway. This course provides students with opportunities to become familiar with related careers and develop fundamental technological literacy as they learn about the history, systems, and processes of manufacturing. In addition, the course will provide an overview of the safe use of tools and equipment used in the industry.



2 ROBOTICS & AUTOMATED SYSTEMS allows students to apply their knowledge of computer aided design (CAD), computer numerical control (CNC), robotics, computer assisted manufacturing (CAM), programmable logic controllers (PLC), automated guided vehicles (AGV), and computer integrated manufacturing (CIM).

3 PRODUCTION ENTERPRISES gives students an understanding of how to design and implement a production system. Students learn how businesses engage in the production of products beginning with pre-production activities and continuing through post-production activities. Additionally, students will learn about the historical and societal impact of production. Students will also develop an understanding of careers available in manufacturing and the skills and education required for those careers.

CAPSTONE: WBL INTERNSHIP >>>

WBL (WORK-BASED LEARNING) connects skilled, knowledgeable and driven students to local businesses every year. Students who participate in the Manufacturing program and have been selected to participate in WBL will leave school early to work with our fantastic business partners. Benefits to students include a chance to put skills learned in the classroom to use in an authentic setting, getting a competitive advantage on their career and networking with industry leading professionals all while still in high school. www.hallcowbl.org



CAREER TECH STUDENT ORGANIZATIONS >>>

SKILLSUSA is a partnership of students, teachers and industry working together to ensure America has a skilled workforce. We help each student excel.

SkillsUSA's mission is to empower its members to become world-class workers, leaders and responsible American citizens. We improve the quality of our nation's future skilled workforce through the development of SkillsUSA Framework skills that include personal, workplace and technical skills grounded in academics. Our vision is to produce the most highly skilled workforce in the world, providing every member the opportunity for career success.



POTENTIAL CAREERS >>>

- Machinists
- Layout Workers, Metal & Plastics
- Welder
- Technicians
- Mechanical Engineering Technicians
- Robotics Engineer
- Mechanical Engineers
- Industrial Engineers
- Multiple Machine Tool Setters, Operators & Tenders
- Nuclear Power Reactor Operators
- Patternmakers, Metal & Plastic
- Machine Operator

MANUFACTURING

CAREER PATHWAY - PLAN OF STUDY



GRADUATION REQUIREMENTS

ENGLISH/LANGUAGE ARTS

4 Units *Must Include:*
9th Grade Literature & American Literature

SOCIAL STUDIES

3 Units *Must Include:*
World History, US History, Government & Economics

MATHEMATICS

4 Units *Must Include:*
GSE Algebra I, GSE Geometry & GSE Algebra II
+
one additional GSE/AP/IB/DE Math course

OR

GSE Accelerated Algebra I/Analytic Geometry A,
GSE Accelerated Geometry B/Algebra II, GSE Precalculus
+
one additional GSE/AP/IB/DE Math course

SCIENCE

4 Units *Must Include:*
Physical Science or Physics; Biology;
Chemistry, Earth Systems, Environmental Science or AP/IB course
+
one additional Science course

HEALTH & PERSONAL FITNESS

1 Unit *Must Include:*
1/2 unit of each

CAREER, TECHNICAL & AGRICULTURE EDUCATION (CTAE)

3 Units *Must include:*
Foundations of Manufacturing & Material Science, Robotics & Automation Systems,
Production Enterprises

ELECTIVES

4 Units

*Students planning to attend most post-secondary institutions must take 2 units of the same modern language.

TOTAL UNITS REQUIRED

23 Units

PERSONAL APTITUDES

ACTIVITIES THAT DESCRIBE WHAT I LIKE TO DO:

- Work with my hands & learn that way.
- Put things together.
- Visualize objects in 3D from flat drawings.
- Apply math to work out solutions.
- Use hand & power tools and operate equipment/machinery.



PERSONAL QUALITIES THAT DESCRIBE ME:

- Practical
- Observant
- Physically active
- Step-by-step thinker
- Coordinated

WANT MORE INFORMATION ON YOU?

YouScience is the science of YOU – how your mind is wired, what makes you tick, the skills and knowledge that set you apart. You have talent and there's a path that's right for you – we can help you find it.



Login to Infinite Campus and locate the SLDS Portal link on the left. Once logged in, click on "My Career Plan" then choose "Go to YouScience".

WHAT YOU LEARN IN SCHOOL MATTERS

You're learning skills and knowledge that can make you a qualified candidate for in-demand careers. Industry-recognized certifications, available to all pathway students, are great signals to employers that you have the skills they're looking for. Certifications help validate what you know, so other people know, that you know it.

QUESTIONS?

Contact your CTAE teacher, WBL Coordinator or School Counselor

PATHWAY TO FUTURE CAREER OPTIONS

HIGH SCHOOL

POST-SECONDARY

Pathway Courses

Foundations of Manufacturing & Material Science
Robotics & Automation Systems
Production Enterprises

Capstone

WBL Internship
Dual Enrollment

Technical College

Certificate
Diploma Program
Degree Program

4 Year College/University

Bachelor Degree
Masters Degree
Graduate Studies