



MANUFACTURING

A GUIDE TO PURSUING YOUR CAREER PATH

MACHINE OPERATIONS >>>

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 **INDUSTRY FUNDAMENTALS & OCC SAFETY** is designed as the foundational course in the Carpentry, Plumbing, Electrical, Masonry, Machining, Welding, Sheet Metal, Heating, Ventilation, Air Conditioning and Refrigeration, and HVACR Electrical pathways to prepare students for pursuit of any career in construction. Students obtain the basic knowledge to function safely on or around a construction site and in the industry in general and will provide the trainee with the option for an Industry Certification in the Construction Core.



2 **INTRODUCTION TO METALS** is designed to familiarize students with fundamentals of various metal occupations for the purpose of preparing them to select either welding, sheet metal, or machining for more highly specialized training in subsequent courses.

3 **MACHINING OPERATIONS I** acquaints the students with the history of the machining trade, equipment used in the trade, attributes of successful machinists, industry credentialing, and career opportunities. Course topics include safety, applied mathematics, measuring instruments, blueprint reading, and metallurgy. Practical experience will be gained in the proper use and maintenance of hand tools, the pedestal grinder, the drill press, and band saws.

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
- Manufacturing Production
- Technicians
- Mechanical Engineering Technicians
- Metal-Refining Furnace Operators
- Mechanical Engineers
- Industrial Engineers
- Multiple Machine Tool Setters, Operators & Tenders
- Nuclear Power Reactor Operators
- Patternmakers, Metal & Plastic

MACHINE OPERATIONS

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:*

Industry Fundamentals & Occ. Safety, Introduction to Metals,
Machining Operations I

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

Pathway Courses

Industry Fundamentals & Occ. Safety
Introduction to Metals
Machining Operations I

Capstone

WBL Internship
Dual Enrollment

POST-SECONDARY

Technical College

Certificate
Diploma Program
Degree Program

4 Year College/University

Bachelor Degree
Masters Degree
Graduate Studies