

Advanced Manufacturing

Engineering • Industrial Machinery • Production & Automation • Robotics • Safety & Quality Assurance



Promising Progressive Career Pathways Map

Education
(Skills/
Knowledge)



Work-Based
Learning



Local Career
Opportunities

Middle School

High School

Community College

University

Middle
School Core
+ Electives



KPS High Schools +
Career and Technical Education
CCC - Machine Tool, Mechatronics

Early/Middle College
Machine Tool Technology

Skill-Based Credentials
CAD-CAM, Machinist,
Machine Tool Operator

Associate of Arts and Sciences
Computer Aided Design, Engineering
Technology Machine Tool Automation,
Machine Tool Technology

Bachelor Degrees
Manufacturing Engineering;
Industrial Engineering; Mechatronics,
Robotics, and Automation Engineering;
Computer Software Technology

EDP (K-12)

Dual Enrollment Choices

2+2 Transfer Programs



Job Shadowing, Co-Ops, Internships,
Apprenticeships, Summer Jobs

Internships,
Apprenticeships,
Full- and Part-Time Jobs

Internships,
Apprenticeships,
Full- and Part-Time Jobs

Structural Metal Fabricators and Fitters	\$48,990
Weighers, Measurers, Checkers, and Samplers	\$53,520
Miscellaneous Assemblers and Fabricators	\$39,030
Inspectors, Testers, Sorters, Samplers, and Weighers	\$43,090

First-Line Supervisors of Production and Operating Workers	\$63,930
First-Line Supervisors of Mechanics, Installers, and Repairers	\$75,580
Industrial Machinery Mechanics	\$61,190
Computer Numerically Controlled Tool Programmers	\$61,080

Mechanical Engineers	\$94,430
Environmental Scientists and Specialists	\$79,540
Industrial Production Managers	\$109,930
Electrical Engineers	\$98,630

Design Your Path to Your Promise
— Explore Where You Can Go.

Kalamazoo Public Schools

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PATHWAY 2 CAREERS



Advanced Manufacturing

Design Your Path to Your Promise — Here's How You Can Get There.

MIDDLE SCHOOL

English Language Arts	Math	Science	Social Studies	World Language	Enrichment	Career Readiness	Elective Focus
English	6 th Grade Math or Accelerated Math	6 th Grade Science	Social Studies	Mandarin Chinese	Physical Ed./Band, Orchestra, or Choir	Life Skills	Tech Smart
English	7 th Grade Math or Accelerated Math	7 th Grade Science	Social Studies	Spanish for Begin. (Elective)	Physical Ed./Band, Orchestra, or Choir	Life Skills	Tech Smart
English	8 th Grade Math or Algebra	Science/Robotics	Social Studies	Spanish Intermediate	Physical Ed./Band, Orchestra, or Choir	Life Skills	Tech Smart

HIGH SCHOOL

English Language Arts	Math	Science	Social Studies	World Language	Enrichment	Career Readiness	Elective Focus
English 9 / Honors English	Algebra 1 and Geometry	Environ. Science & Biology (CEB)	World History	Mandarin Chinese	PE	Tech Smart	Band, Orchestra, or Choir and other career-related programs below.
English 10 / Honors English	Geometry or Algebra II	Biology (DEE) or Chemistry or Physics	US History	Mandarin Chinese	Health	College/Career Readiness	
English 11 A or Honors or AP	Algebra II or Pre-Calculus	Physics or Chemistry or Earth Science	Gov or AP Gov	Mandarin Chinese / French	Drafting	Economics	
College Eng. 12 or Honors Eng.	Pre-Calculus or AP Calculus	Astronomy or Geology	Social Studies Elective	Mandarin Chinese / French	Fine Arts	Electronics & Robotics	

Grade	Possible Career-Connected Pathway Choices		Dual Enrollment Courses	Postsecondary Programs/Majors for Occupations in this Career Cluster	
9	Computer Science/Software Engineering	Information Technology	<ul style="list-style-type: none"> Beginning Computer Skills Fundamentals of Tech Drawing Fundamentals of Machine Tool Ops Basics of Mechanical Science Trends in Manufacturing CAD Design 	Certificates and Associate's Degrees	Bachelor's and Advanced Degrees
10-12	Electronics & Robotics I and II	Drafting: General, Architectural, and Mechanical		<ul style="list-style-type: none"> Machinist Certificate CAD-CAM Certificate Machine Tool Operator, COA CNC Operator, COA Computer Aided Design, AAS Engineering Technology, AAS Machine Tool Tech., AAS 	<ul style="list-style-type: none"> Mechanical Engineering Manufacturing Engineering Industrial Engineering Robotics Technology Electrical/Electronic Engineering Technology
10-12	Computerized Manufacturing	Mechatronics: Robotics & Automation			
11-12	Statistics	Machine Tools			

Kalamazoo Public Schools

College and Career Awareness & Exploration Resources

Higher Education



Early/Middle College Programs

Kalamazoo County Early/Middle College (EMC) is an innovative early college program, which gives students the opportunity to earn an associate degree or certificate with an additional year of high school.



Kalamazoo Valley Community College

Kalamazoo Valley Community College seeks to provide every student with clear, flexible program options that provide a mix of educational skills and experiences that will prepare students for advanced coursework at top universities and meaningful opportunities for employment in a changing world.



Kalamazoo College

Kalamazoo College offers qualified high school students the opportunity to enroll in courses while concurrently enrolled in high school during the fall, winter, and spring terms.



Western Michigan University

Dual enrollment through Early College Programs at WMU provides eligible high school students with credits that may be applied toward high school graduation requirements, as well as a college or university program.



The Kalamazoo Promise

Choosing a career path is one of the biggest and most important decisions you'll ever make. The good news is that The Promise is here to help you find and pursue the career path that fits you best.

Local Career Training Programs



Career Launch Kalamazoo

This modernized Youth Apprenticeship Program that provides flexible occupational training programs that cultivate well-educated, highly skilled workers able to meet the demands of a competitive global economy in careers that are in high demand.



Kalamazoo RESA Career Connect Campus

New in the 2025-2026 school year, students will have the opportunity to participate in programs at the Career Connect Campus (CCC). The inaugural class of students at the CCC will learn from industry experts in a new, state-of-the-art facility.



Teach Kalamazoo

Kalamazoo's Grow Your Own (GYO) Teacher Residency program includes apprenticeships and numerous on-ramps into the teaching profession for undergraduate and graduate students, staff, parents, paraprofessionals, for anyone with an existing bachelor's degree, and/or anyone who is interested in entering the honorable and fulfilling profession of teaching.

Labor Market Tools



Michigan Pathfinder

Pathfinder uses current labor market, wage, and institutional data and metrics to help you create an individualized career roadmap. This free tool provides information to students, parents, and guidance staff to make informed choices about educational and career options.



Pure Michigan Talent Connect

Michigan's free online career exploration tool that provides information on in-demand careers and the degrees or credentials needed to pursue them.

College & Career Exploration and Resources



[Xello Career Exploration](#)

Kalamazoo Public Schools uses the Xello platform so students in grades K-12 can build self-knowledge and explore options beyond high school.



[Michigan Career Development Model](#)

The Michigan Career Development Model (MCDM) is a framework, guided by legislation that engages school communities, students, and their support networks in intentional and meaningful career awareness, exploration, and preparation.



[Advance CTE National Career Clusters Framework](#)

The National Career Clusters® Framework provides a shared structure and language for CTE program design across the United States. The new framework provides meaningful career exploration and preparation experiences through Career Technical Education (CTE) that prepare students for the changing and interconnected world of work.



[Michigan Pathfinder](#)

Pathfinder provides valuable information to help students make informed choices about educational and career options.



[O*NET Online](#)

O*Net provides a collection of resources to inform students' college and career journeys: a Career Exploration Tool, O*NET Interest Profiler, My Next Move, Career One Stop, and Get My Future.



[SAT/PSAT – College Board](#)

The SAT and PSAT are standardized tests meant to show colleges and universities how prepared students are for college by measuring key skills like reading comprehension, computational ability, and clarity of expression.



[EBSCO Learning Express](#)

EBSCO LearningExpress provides online platforms for academic skill building, standardized test preparation, and career-oriented digital content. It helps students prepare for college, explore careers, and accelerate their journey into careers.



[Credential Center](#)

Certifications demonstrate for employers that job candidates have specific skills or knowledge in an occupation, industry, or technology. This site helps students explore training associated with certifications and credentials.



[Apprenticeship USA](#)

Discover apprenticeships across industries, how programs are started by employers, and how to become an apprentice.



[ASVAB Career Exploration](#)

The Armed Services Vocational Aptitude Battery (ASVAB) is a multiple-aptitude battery that measures developed abilities and helps predict future academic and occupational success in the military.

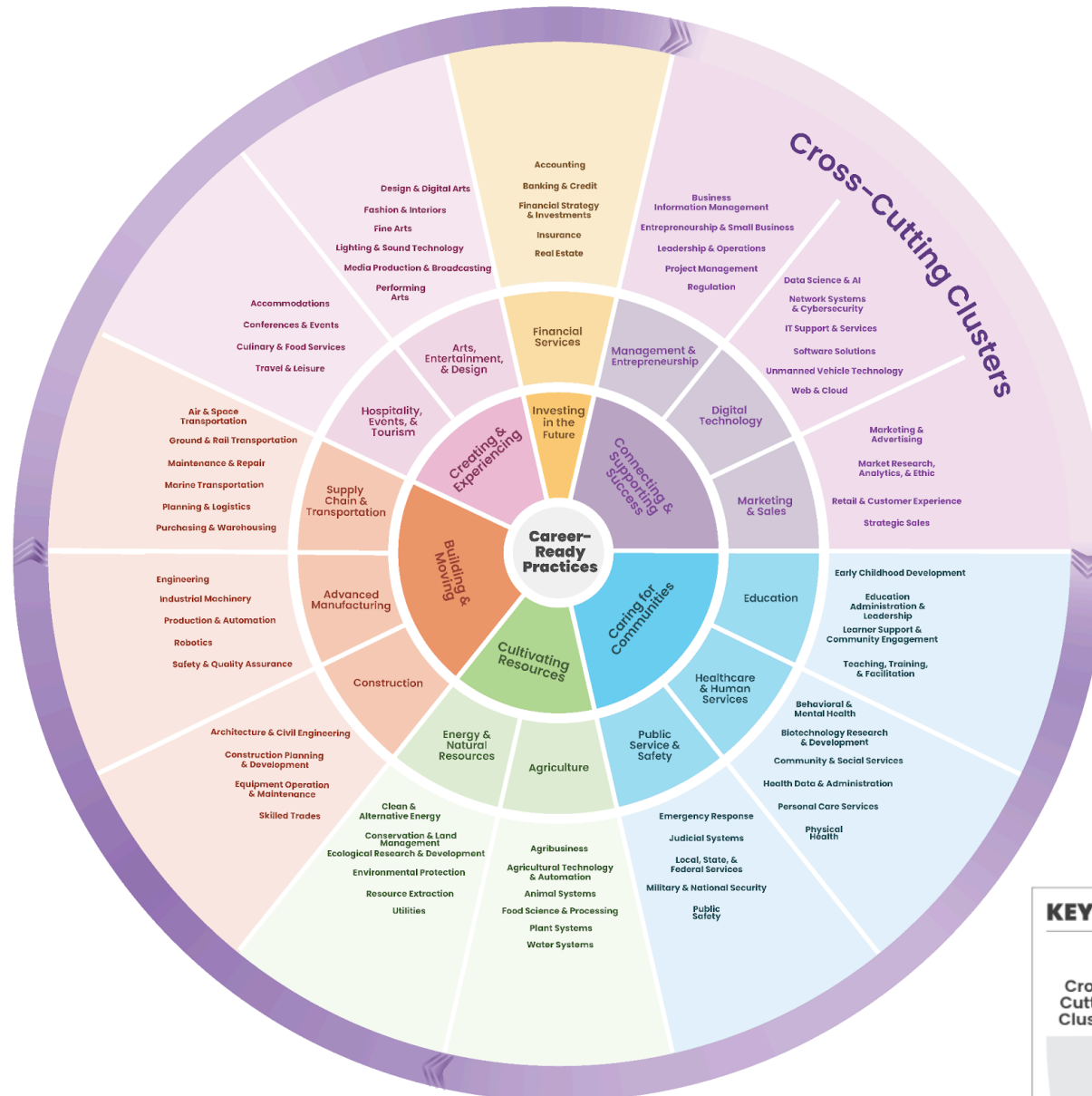


Career Clusters

Pathways to College & Career Readiness

The Framework: Wheel View

ADVANCE CTE
State Leaders Connecting Learning to Work



KEY

Cross-Cutting Clusters Sub-Clusters Clusters Cluster Groupings



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Advanced Manufacturing: *Engineering and Producing Tomorrow's Solutions*

Cluster Definition: The Advanced Manufacturing Career Cluster blends innovative technologies and practices to enhance design and production. It covers areas such as engineering, research and development, automation and artificial intelligence, equipment maintenance, safety protocols, and quality control. This Cluster aims to increase efficiency, reduce waste, ensure safety, and produce high-quality goods, driving the industry's growth and adapting to modern demands.

Sub-Clusters

Example Programs of Study

Engineering: Careers that use engineering principles to develop and improve manufacturing processes and systems and to design products. Professionals in this field tackle production challenges, boost efficiency, leverage advanced technologies, and contribute to the sector's advancement. The manufacturing sector encompasses numerous types of engineering, including mechanical, electrical, chemical, biopharmaceutical, materials, and industrial. This Sub-Cluster also involves research and development and prototyping for emerging products and systems.

Engineering & Technology
Pre-Engineering
Semiconductor Manufacturing
Engineering Technology

Industrial Machinery: Careers focused on working with manual equipment, such as computer-numerical-controlled (CNC) machines, 3D printers, quality control equipment, material handling tools, maintenance and repair devices, specialized machining and surface treatment machines, fabrication equipment, and energy management systems. Professionals in this field set up, operate, maintain, and repair advanced machinery, ensuring efficient and safe performance.

Industrial Machine Mechanics
Precision Machining

Production & Automation: Careers centered on the hands-on management and execution of manufacturing processes. This field involves automation, overseeing production lines, quality control, assembly and product finishing, and ensuring efficient workflow. This Sub-Cluster includes specialized sectors such as processed food and beverage production and textile manufacturing, emphasizing efficiency and adherence to industry standards across diverse production types.

Apparel & Textile Production
Manufacturing Production Process
Development

Robotics: Careers involved in developing, implementing, and maintaining technologies that deploy robotics. This field encompasses roles focused on programming robots; overseeing production lines enhanced by robotics, mechatronics, and smart manufacturing concepts; and ensuring that these technologies operate efficiently and safely.

Industry 4.0
Robotics Technology

Safety & Quality Assurance: Careers dedicated to ensuring workplace safety, worker health, environmental compliance, and product quality. Professionals in this field develop and implement standards and practices to maintain safe and sustainable operations while conducting rigorous testing and inspections to uphold product integrity.

Safety & Environmental Assurance