Education Building Block Guide
for the Regional Advanced Manufacturing Pathway

Introduction

The purpose of this guide is to share employer-vetted guidance on academic and technical skills needed for success in a specific regional career pathway (RCP).

Education building blocks are founded on academic standards developed by the Wisconsin Department of Public Instruction (DPI). With a robust process in place to develop and revise learning standards, employer and industry partners from State and Regional Career Pathway Teams provide input during regular, formal updates to academic standards related to their industry.

Some education building blocks are related to a specific RCP. Other education building blocks apply across all RCPs. As educators create and implement career pathway programs based on RCPs, the goal is to integrate the education building blocks across all the components of the high school career pathway.

Education Building Blocks:

Block One: Employability Skill Standards

Block Two: Digital Literacy Skill Standards

Block Three: Career and Technical Education (CTE) Standards related to the RCP

Block Four: Relevant Academic Competencies

Block Five: Emerging Trends related to the RCP

High School Career Pathway Components:

- Sequence of CTE Courses
- Work-based Learning
- College Credit Opportunities
- Industry-recognized Credentials
- Career and Technical Student Organizations

How to Use This Guide

School districts should use this guide when building new or updating existing career pathway programs related to this regional career pathway. Here are a few of the ways districts could use this guide:

Develop and Improve Curriculum

- Make decisions about which courses to offer and what content should be included in your career pathway courses.
- Provide consistency with standards-based grading and help develop benchmarks.
- Help educators understand how multiple sets of standards can align with each other rather than looking at each set of standards individually.
- Create a curriculum map to see where standards related to this regional career pathway show up across your district's career pathway program.

Prepare Your Students for Success

- Ensure your career pathway program will help students develop the skills and attributes employers are looking for in prospective job candidates.
- Make educators and students aware of the emerging trends that will affect the future of this regional career pathway.
- Share this guide with curriculum and instruction directors, teachers, and counselors as a springboard for reflection and discussion about how your district is preparing students for success in this regional career pathway.

Encourage Collaboration

- Share this guide with employers to identify gaps and brainstorm how you can work together to improve outcomes for students pursuing this regional career pathway.
- Develop a pipeline for your career pathway program by working with elementary and middle school educators to integrate related career awareness and exploration experiences through all grade levels.
- Help high school educators understand how to make the connections between their content and this regional career pathway. Encourage collaboration between CTE and non-CTE teachers.

Download the Crosswalk Worksheet for this regional career pathway so that you can map out where the standards related to each education building block show up in your pathway program.

The Connection Between Career Pathways and Courses

Integrating career pathways into all courses can help build relevance of academic subjects by helping answer the question "Why do I need to know this?" Here are suggestions on how educators can incorporate regional career pathways in elementary, middle, and high school learning environments. This allows academic and career planning activities and career-based learning experiences to be directly integrated into the classroom. To learn more about career-based learning experiences, visit the DPI Work-Based Learning webpage and specifically check out the "Wisconsin Guide to Implementing Career-based Learning Experiences."

In **elementary and middle school,** classroom teachers can help students understand the world of work through Academic and Career Planning (ACP) activities and career-based learning experiences (CBLEs) such as:

- Career-related games, stories, or other activities
- Xello and other online career exploration tools
- Career-related projects
- Career-related volunteering or service learning
- Career fairs
- Classroom speakers
- Company tours

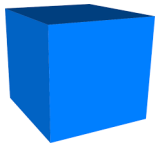
In **middle and high school**, ACP activities and CBLEs should focus on exploring specific careers related to this regional career pathway, as well as developing job search skills and employability skills. Therefore, in addition to the ACP activities and CBLEs listed above, classroom teachers are encouraged to add:

- Job shadows
- Informational interviews
- Career mentoring
- Simulated worksites
- School-based enterprises
- Student entrepreneurial experiences

Finally, it is very important for educators to learn more about this regional career pathway or work with employers to help build real-world relevance into the curriculum. Classroom teachers, counselors, school and district administrators, and school board members can do this through:

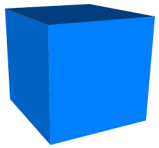
- Educator shadows or visits
- Educator externships
- Inviting employers to consult on curriculum or participate as an advisory board member

Education Building Blocks for the Regional Advanced Manufacturing Pathway



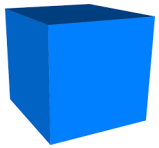
Block One: Employability Skills Standards

Employability skills are a foundation for all career pathways. Don't let the name fool you! These skills can and should be developed in ALL the high school career pathway components, not just in work-based learning experiences.



Block Two: Digital Literacy Skill Standards

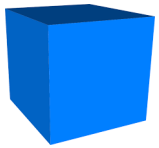
Similar to employability skills, digital literacy is essential for just about any job in the twenty-first century.



Block Three: Technology and Engineering Standards

Wisconsin's Technology and Engineering Standards will significantly improve student readiness for this regional career pathway. Some common Advanced Manufacturing courses include, but are not limited to:

Project Lead the Way Computer Science and Engineering Courses	Intro to Manufacturing	Machining and Metal Fabrication
Computer-Aided Drafting and Design (CAD)	Manufacturing Design and Development	Welding
Advanced/Additive/Computer-Integrated Manufacturing	Technical Drafting and Design	Mechatronics or Robotics



Block Four: Relevant Academic Competencies

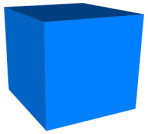
There are many other high school courses that help prepare a student for this pathway, in addition to the sequence of CTE courses. Educators can use this chart when considering which "Additional High School Courses" to list on their district pathway map. While the coursework listed when planning to enroll in a technical college program may vary from the coursework listed for a bachelor's degree program, this should not be the primary deciding factor for students as both options will continue to be available to all students. Students will learn more and be better prepared for postsecondary options by taking courses in which they are deeply engaged and can see how the instruction is relevant to their future.

Students may also want to consider taking listed courses as advanced placement (AP), international baccalaureate (IB), or dual enrollment where available. Educators can explore how academic competencies are related to career pathways in Section V: Connecting CTE and the Common Core Standards (also linked in Block Three above).

High School Courses* for this Career Pathway				
	High school courses for students planning to enroll in a:			Additional Courses to Consider and links to related standards
	Registered Apprenticeship	**Technical College Program**	**Bachelor's Degree Program**	
Mathematics	Geometry, Algebra 2, Trigonometry	Algebra, Geometry, Trigonometry	Geometry, Algebra 2, Trigonometry, Pre-calculus or Calculus	Following a comprehensive two years of mathematics that allows for students to engage in a wide variety of applications to be flexible users of mathematics, third and fourth courses continue to develop the Standards for Mathematical Practice. These courses could have an intentional focus on mathematical modeling, statistical modeling, and/or computational thinking that uses advanced manufacturing as the context.
Science	Chemistry, Physics	Chemistry, Physics	Chemistry, Physics	
English	Communications/ Speech, Technical Writing	Communication/ Speech	Communication/ Speech, Composition	English Language Development Standards Participation in Debate or Forensics, Resume writing and interviewing skills
Social Science	World History and Culture, Economics			
Language, Intercultural and Global Competence	Any world language		At least two years of the same world language	Four-year progression of world language courses leading to Seal of Biliteracy and Certificate of Global Competence credentials. Recommend innovation and partnerships for access to less-commonly taught languages, internships, and dual-credit opportunities. Manufacturing Standards Crosswalk With Global Competence Language, Intercultural, and Global Competence for Advanced Manufacturing Pathway
Arts**	Drawing, Drafting, and Design			

* In addition to traditional high school courses, the courses in this table could also be taken at the honors, AP, IB, or dual enrollment level, when available.

** Includes: Art and Design, Dance, Music, and Theatre



Block Five: Emerging Trends Related to this Regional Career Pathway

Students need to be aware of the trends related to this pathway in order to understand how the industry is evolving. Educators can prepare students for success in this pathway by highlighting these emerging trends that Wisconsin employers have shared with us.

Governance, Regulatory, and Legal Trends

- Learn how tariffs and environmental regulations affect manufacturing businesses.
- Understand the impact of cybersecurity and data privacy, especially on remote work and citizenship requirements.

Global and Cultural Trends

- Gain a basic understanding of sustainable manufacturing, global supply chain networks and the electrification of industrial processes.
- Understand how manufacturing businesses are affected by a global economy.
- Learn about the importance of company culture.

Technology Trends

- Become familiar with terms such as: Industry 4.0, Internet of Things, Artificial Intelligence, Augmented Reality, and Virtual Reality.
- Gain a basic understanding of Additive (vs) subtractive machining and robotics.
- Understand the impact of technology on manufacturing. Learn how smart factories operate by relying on computers making decisions humans used to make.

Articles on Emerging Trends for this Regional Career Pathway

- The Future of Work in Manufacturing: What Will Jobs Look Like in the Digital Era?
- The Future Factory: Mapping the Skills that Will Power Manufacturing
- Teaching the Industrial Internet of Things: Preparing Students and Learners for Industry