



Technology Career Pathway

Preparing secondary students for
careers in integrated information and
data technology through Regional
Career Pathways

Education Building Blocks

PURPOSE

The purpose of **Educational Building Blocks** is to give secondary educators guidance on the skills and competencies that will prepare their students for careers in construction.

Education Building Blocks are not fully developed curriculum and lessons, **nor are they a replacement for state education standards in content areas**. Rather, they should be used as guidelines that reference the skills and competencies that employers are looking for in a particular industry. These guidelines should inform you as you develop curriculum aligned to state standards.

Education Building Blocks are comprised of four groups of skills:

- *Employability Skills
- *Digital Literacy Skills
- *Academic Skills
- *Technical Skills

The combination of these sets of skills comprise the necessary learning to prepare students to be future ready to transition to adulthood prepared for college AND careers.



PROCESS

Groups of employers and employer professional associations (Appendix C) have gathered to develop this document in order to provide secondary educators with a current picture of skill sets desired in a particular high skill, high demand industry sector. Their input has been collated into this guidance document for use in regional career pathway development in secondary settings.

Once defined, the **State-Endorsed Career Pathway outline (page 12-13)** was developed showing the career ladder progression, as well as the desired industry-recognized credentials and education needed to advance to different levels in the industry sector.

The State-Endorsed Career Pathway outline is adopted into a **Regional Map** by Regional Councils of higher education and public agency partners to leverage their local resources for implementation. Regional Councils must address barriers to access, as well as connect secondary students directly to available work-based learning experiences, dual credit (high school and college) course opportunities, and local district course offerings. This “ready-made Academic and Career Plan (ACP)” highlights to students the series of activities for those interested in the career sector. Regional Maps, adopted by the local school, can be used with students and families in ACP planning and advising.

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SKILL SETS

All Regional Career Pathways require districts to identify a sequence of courses that students will take in order to complete the secondary pathway. The specific courses may vary from district to district. However, every district's sequence of courses should reflect Education Building Block learning for the pathway. This ensures a consistent approach to the skills and competencies that are being developed while providing local flexibility in delivery.

Employability Skills

Often referred to as "Soft" skills, the source for the Employability Skills Set in the Education Building Blocks is the Wisconsin Department of Public Instruction's (DPI) Employability Skill Standards (Appendix A). Furthermore, because employers are also seeking job candidates that are able to think and act innovatively, it is also recommended to reference the Innovation Learning Outcomes (Appendix A) as part of this learning. Although this skill set was originally created for future entrepreneurs, it provides suggestions to prepare students to become innovation leaders with an entrepreneurial mindset.

Digital Literacy Skills

Today's job market requires some level of digital literacy. Therefore, it is essential to include digital literacy skills in every Education Building Block model. For our purpose, Digital Literacy Skills are defined by DPI's Information and Technology Standards for Digital Literacy (Appendix B).

Academic Skills

Academic Skills are clearly defined by states in standards which act as benchmarks of quality and excellence in education. The Wisconsin Academic Standards (Appendix C) specify what students should know and be able to do in the classroom. Setting high standards enables students, parents, educators, and citizens to know what students should have learned at a given point in time. State standards serve as a model. Locally elected school boards adopt academic standards in each subject to best serve their local community. Educational Building Blocks point to specific groups of academic skills that employer partners have indicated are critical to their industry.

Technical Skills

Often referred to as "Hard" Skills, employers recognize that developing basic occupational skills in secondary settings allows students to apply academic learning in unique and contextualized ways. Employers identify specific technical skills in the Educational Building Blocks that should be developed for anyone interested in pursuing a career in the this area.

"The solution is to pursue initiatives that instill both hard skills and soft skills into the available workforce, not settle for one at the expense of the other."

Matt Kirchner, Lab Midwest

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THE TECHNOLOGY PATHS

A Dynamic Pathway

Much debate has occurred between employers with how to visualize the traditional and changing nature of this particular pathway. Information and Data Technology careers are now integrated into all industry sectors and considered a critical role in all business operations, no matter the industry.

Traditional IT careers were, and sometimes still are, separated into distinct teams and divisions within companies. However, a shift has been occurring for sometime that will necessitate everyone understanding the connection of their career to the tasks of information, data integration, analysis, technological applications, as part of regular business operations. Noting this trend, the current career pathway outline is structured in a traditional manner, but educators are encouraged to consider that all students will need digital and technological literacy as indicated in Appendix B. For those students interested in pursuing deeper knowledge and exploration in preparation for information, data, digital, and integrated technology careers, the focus should be grounded in basics that allow for movement between sub-pathways as opportunities and preferences are discovered.

Technology Sub-paths*

The following Technology Career Pathway represents areas of skill attainment for career ladders. However, as indicated above, it is important to remember that high school foundational knowledge should include skill application from all of these areas.

Business Analyst/Project Management

Computer technology is combined with business knowledge to research and design systems that make businesses more efficient and cost-effective, including managing technology projects using principles of project and risk management, contract management, software management, organizational principles and behavior, quality assurance, financial analysis, leadership, and team effectiveness.

Cybersecurity

Information security is necessary to protect computers and systems from threats and unauthorized access in order to ensure that digital data is safe and protected.

Data Technology

Use computer software programs, applications, and data analytics for inputting, verifying, organizing, storing, retrieving, transforming (changing, updating, and deleting), and extracting information using various operating system configurations and data manipulation in spreadsheets, calculators, management programs, design programs, database programs, and research programs.

Network/Systems Infrastructure

Oversee and regulate the computer system and performance requirements of an entire organization or network of satellite users with performance balancing; redundancy; local area (LAN) and wide area (WAN) network management; system migration and upgrading; outage control; problem diagnosis and troubleshooting; and system maintenance budgeting and management.

Software Developer/Programming

Write, test, develop, maintain, and analyze software programs and data for every function on a computer or mobile devices.

* SEE Page 17 for references

Education Building Blocks

BLOCK 1

Employability Skills

Appendix A

- Employability Skill Standards
- Innovation Learning Outcomes

BLOCK 2

Digital Literacy Skills

Appendix B

- Standards for Information and Technology Literacy

BLOCK 3: ACADEMIC SKILLS

Math Concepts

1. Understand relationships between numbers (Add, subtract, multiply, divide, convert whole numbers, fractions, decimal, percentages)
2. Calculate averages, ratios, proportions, rates
3. Use and report measurements correctly including units of measurement
4. Convert from one measurement to another
5. Use appropriate mathematical formulas to solve problems
6. Use basic statistics
7. Properly use correct order of operations in spreadsheets for data manipulation

NOTE:

Advanced math courses (Algebra2+) demonstrates to employers and colleges that students possess advanced problem solving skills

Science Concepts

1. Apply the scientific method to troubleshooting and problem solving for all types of problems.
2. Understand the foundation of electricity and requirements for computerized devices.
3. Understand basics of data, data movement, and data storage (electronic, magnetic, qubits, etc.)

Communication

1. Communicate effectively verbally and in writing, including telephone conversations
2. Locate, comprehend, and interpret written information
3. Understand complex instructions
4. Critically evaluate and analyze information in written materials
5. Note details, facts, and inconsistencies
6. Apply what is learned to follow instructions and complete tasks
7. Communicate in a logical, organized and coherent manner
8. Use appropriate tone and word choice
9. Interpret, understand, and respond to verbal messages and other cues
10. Understand non verbals, body language, facial expressions
11. Uses Empathy and Sympathy and applies them to verbal communication
12. Evaluates and questions sources of information, to detect bias, and counter bias and opinion in writing and speaking



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BLOCK 4: TECHNICAL SKILLS- CAREER SUCCESS SKILLS

Be prepared for a Technology Career.

For an individual to reach the Technology Industry workforce ready they must have a basic understanding of the

disciplines that underpin success, including:

- Business processes
- Basic technology use and applications
- Math

They possess characteristics such as:

- Logical, critical thinking and complex problem solving
- Active listening and learning
- Versatility and adaptability
- Active, life-long learner

BLOCK 5: TECHNICAL SKILLS- EDUCATION STANDARDS

Business and Technology concepts are taught at all grade levels by classroom teachers. Elementary and middle school education serve as the foundational background to advanced study in high school business and technology pathways courses. Connect employer recommendations in this document to [Wisconsin's Standards for Business and Information Technology](#) at: Pages 55-126.

As students move through the Academic and Career Planning (ACP) process into high school, identify those interested in pursuing a career in information and integrated technology. Counselors and advisors should help these students create an ACP plan that is developed from the [published State-Endorsed Regional Career Pathway](#) plan, which includes:

- an appropriate sequence of courses,
- industry recommended certifications,
- related dual credit courses, and
- related work-based learning experiences



Standards specific to this Pathway in Business and Information Technology (BIT):

Business Calculations (BCA)

- BCA1 Analyze and use appropriate operations to solve business and personal math problems
- BCA2 Use international standards of measurement when solving business problems
- BCA3 Analyze and explain statistical data in charts, tables, and graphs

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BLOCK 5: TECHNICAL SKILLS- EDUCATION STANDARDS

Standards specific to this Pathway in Business and Information Technology (BIT):

Business Communications (BC)

- BC1 Communicate in a clear, concise, accurate and courteous manner personally and professionally
- BC2 Apply basic social communication in both personal and professional settings
- BC3 Use current technology to enhance effectiveness of communication
- BC4 Locate, assess, and use information from a variety of sources
- BC5 Plan and write documents that are appropriate for the situation, purpose, and audience
- BC6 Listen discriminately and respond appropriately to oral communications

Management (MG)

- MG1 Describe business management functions and examine their implementation in business
- MG2 Examine organizational structures for businesses and use operations and production principles for effective operation of the business
- MG3 Examine the role of the human resource department and its function as means to achieving management's goals

IT Foundations (IT)

- IT1 Use an appropriate digital tool to meet personal and business needs
- IT2 Evaluate and maintain current and emerging hardware as it relates to configuring, installing, upgrading, diagnosing and repairing
- IT3 Describe, organize, create and maintain a database management system

Networking (NT)

- NT1 Analyze network system needs and requirements

Programming and Applications Development (PR)

- PR1 Assess customer needs and develop an appropriate software or application solution



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BLOCK 6: TECHNICAL SKILLS- ESSENTIAL TECHNICAL SKILLS

Technology Foundations

Role of Technology in Business

1. Explain the role of technology in Business
2. Describe the concept of business continuity
3. Differentiate between information and data
4. Explain the role of technology in converting data and information into organizational knowledge
5. Identify variety of functions supported by technology
6. Describe the impact of technology in all product design and development
7. Differentiate between using technology versus developing the technology
8. Define fundamental capabilities of computers, software, information systems, communications
9. Use basic communications applications (Email, Word, Excel, etc)
10. Use standard formulas and functions, format and modify content, in spreadsheets, graphs, or charts
11. Use Internet applications to search for information
12. Understand social media and their appropriate workplace uses
13. Manage file storage: use functions to store, retrieve, and sort documents
14. Describe steps in the information processing cycle (input, process, output, storage, archive)
15. Explain importance of good record keeping, documentation, and institutional knowledge

Security

1. Compare types of information, technology disaster scenarios that may impact an organization
2. Describe digital Ethics related to Confidentiality, Privacy, Artificial Intelligence (AI) growth, Security Copyright, and ownership of digital content
3. Explain the importance of information security, assurance, and privacy to individuals, organizations, industries, and societies
4. Define privacy and potential abuses of private information
5. Recognize secure web addresses, e.g., "https://" or "shttp://" and personally identifiable information (PII)
6. Explain privacy policy and understand what data (location, access to social networks) an application can access prior to downloading and installing

Hardware— Describe basic elements necessary for information processing:

1. Central processing unit (CPU)
2. Storage media, e.g., internal hard disk, external hard disk, network drive, CD, DVD, USB, flash drive, memory card
3. Input devices, e.g., mouse, keyboard, trackball, scanner, touchpad, stylus, joystick, web camera, digital camera, microphone, voice recognition, remote control, and head, mouth, and eye operated controllers
4. Output devices, e.g., screens/monitors, printers, speakers, headphones

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BLOCK 6: TECHNICAL SKILLS- ESSENTIAL TECHNICAL SKILLS

Data: Applications, Databases & Storage Skills

1. Characterize data and different kinds of data (structures, unstructured, text-based, character limits)
2. Select information, appropriate tools, processing techniques, and data analytics needed for a task
3. Explain importance of reliable and efficient data backup and restoration
4. Knowledge of different ways to store & structure data- SQL, text files, cookies, MS word files
5. Describe Unstructured data
6. Explain Encryption models
7. Understand relational and non-relational databases and data lakes
8. Use of dashboards, reporting, data analytics- using data
9. Use of Statistical modeling and building probability models
10. Describe the impact of Artificial Intelligence

Systems, Infrastructures, Wireless Skills

1. Compare Cloud-based applications, local server-based applications, and applications installed on a local computer, and know when to choose between them
2. Describe Network Components (Hubs, Switches, Routers, Firewalls, Access Points, Thin Client Access Points, WLAN Controller, Transmission media- cable, fiber, UTP), Ethernet
3. Operating systems used in common mobile devices- advantages & disadvantages
4. Explain the benefits and drawbacks of mobile computing, including its effect on business
5. Describe critical system performance indicators
6. Compare common mobile technologies (Laptop and netbook computers, Mobile phones and 'smart phones', Global positioning system (GPS) devices, Wireless debit/credit card payment terminals, RFID)
7. Compare mobile communication technologies (4G mobile data systems, Bluetooth, Dial-up services, GPS, Third generation (3G), global system for mobile communications (GSM) and general packet radio service (GPRS) data services, Virtual private networks, Wireless
8. Compare Mobile Operating Systems (Android, Bada, iOS, Microsoft Windows, Research in Motion (RIM), Symbian
9. Differentiate between public, hybrid, and private clouds
10. Describe Legal, compliance, accessibility, and privacy issues associated with cloud computing
11. Understand bandwidth speeds and their importance (megs/gigs)
12. Define function of networking devices, applications, uses, means of connectivity
13. Describe basics on networking and connections
14. Explain IP Network addressing
15. Describe Cloud management, MPLS

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BLOCK 6: TECHNICAL SKILLS- ESSENTIAL TECHNICAL SKILLS

Software & Programming

1. Explain steps in common Software Development Life Cycle (SDLC) models
2. Describe common software architectures, including layered and distributed architecture models
3. Describe platform-specific developmental requirements, e.g., embedded systems, mobile computing, specialized devices, augmented reality, wearable computing
4. Compare basic Web development functions and processes
5. Explain importance of successful collaboration between software developers and designers, i.e., a developer's ability to translate an "artistic" design into a functioning piece of software
6. Know what an algorithm is and how it works
7. Explain firmware and how it connects software & Operating Systems to interact
8. Compare common programming and scripting languages and what they are used for
9. Describe relationships between databases and programming
10. Compare common business processes for collecting information and feedback on software functionality
11. Compare Development Algorithms (sorting, searching, automating and improving efficiency)
12. Define Application Program Interface (API) and its use for data integration
13. Describe Basic programming constructs (assignment, arithmetic expressions, loops, conditions, input/output, error handling)
14. Compare Data structures (list, vector, array, stack, queue, tree, graph, maps)
15. Define Event-driven programming, Object oriented programming, Programming concurrent processes)
16. Define the Programming process [Testing/Quality Assurance]
17. Compare Development/Programming Technologies (Database, Integrative coding, Inter-systems communications)
18. List Machines languages and compilers, Parallel systems development/programming, Programming and scripting languages, Software security practices
19. Explain Error handling is a critical part of programming as they can be entrees for hackers
21. Understand how a compiler works
22. Describe and test code in a development environment
24. Outline basics of assembler coding, language coding, etc
25. Explain programming and use of programs on different devices and in different interactivity requirements; mobile; instant communications, etc.

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BLOCK 6: TECHNICAL SKILLS- ESSENTIAL TECHNICAL SKILLS

User Support

1. Communicate with users/customers for the purpose of assessing their needs and helping them solve problems
2. Provide customer service and support for common software/hardware issues
3. Troubleshoot problems in person or remotely
4. Describe Quality assurance concepts
5. Describe the importance of good documentation and recordkeeping in customer service operations
6. Exhibit empathy and sympathy in supportive social interactions
7. Provide user support with phone/email contact, first response, escalation, user empathy, communicating to users and developers, phone/call centers, etc.

Technology Security

1. Explain Principles of Information Assurance (Asset value, CIA triad, Access control, Separation of duties)
2. Consider Data Management in Storage media, transmission archiving, retention requirements, data destruction, de-duplication, data loss prevention, social network usage, information rights
3. Describe Identity Management (Identification vs Authentication, single-factor & multifactor authentication)
4. Explain importance of Account Creation, Password Rules, Access Controls
5. Describe common System & application security threats & vulnerabilities
6. Explain Internal & external sources of risk
7. Practice Safe Internet Behavior
8. Compare typical Social Media Risks
9. Explain Need for an organization security program and the use and importance of organizational security policies
10. Describe Importance of ensuring accurate data and keeping information systems available to authorized uses
11. Explain concepts of Confidentiality, Integrity, and Availability (CIA)
12. Describe Importance of protecting data and information systems from accidental disclosure or destruction, unauthorized access or modification, and inappropriate use or malicious compromise
13. Explain Need for separation of duties and other business controls
14. Understand the need for controls and privileges based on an individual's job duties
15. Compare common Major access control systems and their function
16. Explain Need for regular backup procedures
17. Compare Common measures used to protect privacy and confidential data
18. Describe the Fundamentals of data security
19. Explain data encryption and data loss prevention techniques and tools
20. Explain importance of incident identification, reporting, management, and investigation

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THE STATE ENDORSED PATHWAY OUTLINE

[LINK TO STATE PATHWAY MAP](#)

Pathways Wisconsin Technology State Employer Pathway Outline					
	Business Analysis Project Management	Cybersecurity	Data Technology	Network & Systems Infrastructure	Software Developer Programming
HS Diploma	*Help Desk, *IT Customer Services/Software (User) Testing, Data Collection				
Military	Enlisted: Network Admin, Database Admin, Cybersecurity Specialists, IT Managers Officer (Bachelor Degrees): Cybersecurity, Cyberwarfare, Cyber Operators, Programmers, Developers, Network Admin, Database Admin, IT Managers				
Registered Apprenticeship	Data Analyst, *IT Service Desk Technician				*Software Developer
Valuable Additional Certifications in these careers	MS- MOS; COMP TIA- IT Fundamentals, A+, NET+, SEC+, Project Six Sigma White or Green Belt; SCRUM, PMP, PMP; CAMP; ITIL Foundation	CISCO- CCENT, CCT, CyberOps, CCNA Security & SI; CISSP; COMP TIA- SEC+	MS- MOS, MTA, MCSA, MCSE; Oracle SQL, Database 12c, IBM DB2	MS- MCSA; CISCO- CCENT, CCNA, CDNA, RRS; LINUX Essentials; COMP TIA- Cloud Essentials	MS- MTA; MCSO JAWA; Swift/Android Mobile APPS; AWS; SCRUM; CI
Technical Diploma	*Desktop/PC Support, *Help Desk	*Desktop/PC Support *Help Desk	Database Entry, Reporting, Converter Operator, *Desktop/PC Support, *Help Desk	PC/Tech Support, *Systems Tech, *Network Tech Support, *Server Infrastructure Support, BYOD Tech	*Junior Web Developer, Designer, *Mobile Application Support, *Mobile Developer
Associate Degree	Junior Analyst, IT Project Coordinator, Technical Trainer	Computer/Info Security Analyst, Vulnerability Tester, System Admin, Code Decrypter	Database Entry, Reporting, Database Maintenance, *Database Administrators	*Network Support Specialist, *Network Administrator, *Network Architect, 3D Printing, Technician	*Web Developer, *Mobile Application Developer, *Software Application Developer, *Programmer Analyst, Software Tester, Mainframe Programmer, LINUX Designer, Virtual Augmented Reality
Bachelor Degree+	*Tech Support Manager, *Business Analyst, IT Project Manager, Business Relationship Manager, SCRUM Master, Product Owner, Organizational Change Strategist	*Systems Security Specialist, Cyber Crime Investigator, Source Code Security Analyst, IT Auditor, Security Analyst, *Cybersecurity Manager, Engineer	*Data Administration, *Data Developer, *Data Architect, Data Engineer, AI/Machine Learning, Data Warehouse, Database Security Analyst, Business Intelligence, Data Science, GIS Scientist	*Network Architect, *IS Manager, *Business Engineer, *Development Operations Engineer, Cloud Engineer, *Systems Analyst, Cloud Solutions Architect	Web Administration, Programmer Analyst, *Software Developer, *Application Developer, Programmer, *Software Engineer, *Infrastructure Architect, *IS Developer, *Mobile Apps Developer, DevOps Engineer, DevOps Integration Specialist

*High Demand, High Skill in WI, DWD projections 2016-2026

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Pathways Wisconsin
Technology
State Employer Pathway Outline

HIGH SCHOOL OPTIONS

High schools offering a Regional Career Pathway need to include one option from each of the four elements. Students can get a head start in high school by completing 2 of the 4 pathway elements in a Regional Career Pathway.

<p>ELEMENT 1: Sequence of Courses</p> <ul style="list-style-type: none"> Must offer a minimum of three related courses Courses should align with IT Education Building Blocks 	<p>ELEMENT 2: State Certified Work-Based Learning Program</p> <ul style="list-style-type: none"> Employability Skills (90 hrs) State Skill Standards Co-Op Business/IT (480 hrs/1 year) Youth Apprenticeship - IT (450 hrs/year; 1-2 years) Local Internship/Co-Op (90+ hrs/1 year) IF State Approved <p>WBL Guide</p>	<p>ELEMENT 3: College Credit Opportunities</p> <p>Can be one of the minimum sequence of 3 courses</p> <p>College dual credit courses MUST count in the postsecondary program</p> <ul style="list-style-type: none"> AP/IB Courses & Scores accepted Technical College Classes (Start College Now) University Classes (CLEP, CAPP, etc., and/or Early College Credit Program) 	<p>ELEMENT 4: Industry Recognized Certifications</p> <p>Note some certifications may be more appropriate for specific pathways than others</p> <p>*Approved for CTE Incentive Grants</p> <ul style="list-style-type: none"> MS- MOS (MIN *2), *MTA CISCO- *Essentials, *CET, CCT, *Any CCNA COMP TIA- Fundamentals, *A+, SEC+, NET+ JAWA NET *Swift/Android Mobile APPS *LINUX- Essentials Oracle SQL (*JR or higher) Agile Web- HTML User Interface/UX
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Related Career Awareness and Exploration Experiences

- First Robotics
- Hour of Code
- Destination Imagination
- Future Business Leaders of America (FBLA) Student Organization
- Girls Who Code
- Maker Spaces

Also consider including regional experiences, such as:

- Inspire Profiles & Career Development Activities
- Specific Workforce Development programs
- Technical College Boot Camps or Summer Programs
- Project Based Learning programs
- Summer Exploration Camps

Technology is more than coding and crosses all industries!

Agriculture	Energy	Manufacturing	Education	Healthcare
Transportation	Finance	Business	Marketing	Hospitality
Law & Corrections	Engineering	Construction	A/V Technology & Communications	

Career Movement often occurs across Pathways

[LINK](#)

Source: U.S. Department of Labor, CareerOneStop, Competency Model Clearinghouse

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THE STATE ENDORSED PATHWAY OUTLINE



Pathways Wisconsin
Technology
State Employer Pathway Outline



POSTSECONDARY OPTIONS
You have many options after high school if you want to pursue this Regional Career Pathway!

<p>ENTRY LEVEL WORK</p> <p>Entry level positions in the IT industry often begin with customer service skills through the help desk and applicable certifications.</p>	<p>MILITARY</p> <p>Enlisted</p> <ul style="list-style-type: none"> • Computer Repairers • Cybersecurity Specialists • Cyber-Operations Specialists • Geospatial Imaging Specialists • Network Administrator • Database Administrator <p>Officer:</p> <ul style="list-style-type: none"> • Cybersecurity Officer • Cyber-Operations Officer • Cyber Warfare Officer • Geospatial Imaging Officer • IT Manager • Programmer & Developers 	<p>TECHNICAL COLLEGE: SKILLED/TECHNICAL POSITIONS</p> <p>Regional Postsecondary Options should include industry recognized certifications and associate degrees in programs such as:</p> <ul style="list-style-type: none"> • Automated Manufacturing Systems • Business Analyst • Computer Support Specialist • Database Administrator • Database Software • E- Business Technology Analyst • Help Desk/Technical Support Specialist • Industrial Automation • IS Security Specialist • Mobile APP Developer • Network Specialist • Network Systems • Social Media Strategist • Software Developer • Web Developer • Web Designer <p><Specific program names will vary in each region.></p>	<p>UNIVERSITY: PROFESSIONAL POSITIONS</p> <p>Regional Postsecondary Options should include industry recognized certifications and bachelor degrees in majors such as:</p> <ul style="list-style-type: none"> • Computer Engineering • Computer Science • Data Analytics • Industrial Technology Management • Information Science & Technology • Information Systems • Management Information Systems • Operations & Technology Management • Software Engineering <p><Specific program names will vary in each region.></p>		
<p>REGISTERED APPRENTICESHIPS</p> <p>To become a Journey Worker, you must complete an IT Registered Apprenticeship (RA) Program. You can find the RA programs offered in WI that would prepare you for this pathway here:</p>	<p>TECHNICAL COLLEGE: SEMI-SKILLED POSITIONS</p> <p>Regional Postsecondary Options should include industry recognized certifications and technical diplomas in programs such as:</p> <table style="width: 100%; border: none;"> <tr> <td style="vertical-align: top;"> <ul style="list-style-type: none"> • Computer Support Technician • Digital Forensics Analyst • Junior Web Developer • Mobile iOS; Programmer • Web Software Developer </td> <td style="vertical-align: top;"> <ul style="list-style-type: none"> • Database Developer • Help Desk • Network Systems Technician • Virtualization </td> </tr> </table> <p><Specific program names will vary in each region.></p>			<ul style="list-style-type: none"> • Computer Support Technician • Digital Forensics Analyst • Junior Web Developer • Mobile iOS; Programmer • Web Software Developer 	<ul style="list-style-type: none"> • Database Developer • Help Desk • Network Systems Technician • Virtualization
<ul style="list-style-type: none"> • Computer Support Technician • Digital Forensics Analyst • Junior Web Developer • Mobile iOS; Programmer • Web Software Developer 	<ul style="list-style-type: none"> • Database Developer • Help Desk • Network Systems Technician • Virtualization 				



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[LINK TO STATE PATHWAY MAP](#)

Education Building Blocks

APPENDIX A– EMPLOYABILITY SKILLS

Wisconsin Employability Skill Standards

1. Develops positive relationships with others.
2. Communicates effectively with others.
3. Collaborates with others.
4. Maintains composure under pressure.
5. Demonstrates integrity.
6. Performs quality work.
7. Provides quality goods or service (internal and external).
8. Shows initiative and self-direction.
9. Adapts to change.
10. Demonstrates safety and security regulations and practices.
11. Applies job-related technology, information, and media.
12. Sets personal goals for improvement.



Innovation Learning Outcomes

Art of Entrepreneurship– Critical Thinking

1. Information discovery
2. Interpretation and analysis
3. Reasoning
4. Problem Solving/Solution Finding
5. Constructing arguments

Art of Entrepreneurship– Communication

1. Engaging in conversations & discussions
2. Using 21st century communication tools
3. Listening
4. Delivering oral presentations

Art of Entrepreneurship– Collaboration

1. Leadership & initiative
2. Cooperation
3. Openness
4. Responsibility & productivity
5. Use if Tech Tools for collaboration
6. Responsiveness

Art of Entrepreneurship– Creativity

1. Idea generation
2. Idea design & refinement
3. Openness & courage to explore
4. Work creatively with others
5. Creative production & innovation

Attitude of Entrepreneurship

1. Adaptability & openness to change
2. Curiosity & imagination
3. Risk taking & being opportunistic
4. Optimism & persistence; Resilience
5. Focus; Goal-Oriented

Science of Entrepreneurship

1. Who is your customer?
2. What can you do for your customer?
3. How can you acquire your customer?

[Student Entrepreneurial Accelerator Program](#). The Commons, 2016.

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APPENDIX B– DIGITAL LITERACY SKILLS

Wisconsin Standards for Information and Technology Literacy

Empowered Learner

1. Students leverage digital tools and strategies to take an active role in choosing and achieving their learning goals.
2. Students understand the fundamental concepts of technology operations and demonstrate the ability to choose, use, and troubleshoot current technologies.
3. Students are able to transfer knowledge to explore emerging technologies.

Digital Citizen

1. Students recognize the rights, responsibilities, and opportunities of living, learning, and working in an interconnected digital world.
2. Students will demonstrate an understanding of and respect for the rights and obligations of using and sharing intellectual property.

Knowledge Constructor

1. Students critically curate a variety of digital tools and diverse resources.
2. - Students produce creative artifacts and make meaningful learning experiences from curated knowledge for themselves and others.

Innovative Designer

1. Students use a variety of digital tools and resources to identify and solve authentic problems using design thinking.
2. Students use a variety of technologies within a design process to create new, useful, and imaginative solutions.

Computational Thinker

1. Students develop and employ strategies for understanding and solving problems.

Creative Communicator

1. Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats, and digital media appropriate to their goals.
2. Students publish and present content customized for their audience(s), purpose, and task.

Global Collaborator

1. Students use digital tools to broaden their perspectives and enrich their learning with culturally responsive practices by collaborating and working effectively with local and global teams.
2. Students use digital tools to connect with a global network of learners and engage with issues that impact local and global communities.



[Complete Standards set](#) by grade band. November 2017.

Education Building Blocks

APPENDIX C- STATE TECHNOLOGY PARTNERS

The Wisconsin Department of Public Instruction (DPI) and J.P. Morgan Chase New Skills for Grant project, Pathways Wisconsin, thank the following partners for contributing to the development of this secondary Career Pathway.

Employer Partners.

- Adel Nasiri, Milwaukee Tech Hub
- Annette Smith, Wisconsin Department of Public Instruction- IT Team
- Brad Zapecki, SafeNet Consulting
- Bradley Gauthier, Sitecast
- Connie Loden, NEW IT Alliance
- Dan Retzlaff, Wisconsin Department of Public Instruction- IT Team
- David Cagigal, Wisconsin Department of Administration- Cyber
- Edward Rosson, F&M Bank
- Eric Printz, WI Technology Association
- Guy Perez, InfoSec Institute
- Irrosol Arce, Northwestern Mutual
- Jack Schultz, American Transmission
- Jamie Grab, Experis
- Jane Durment, IT United
- Jeff Post, Wisconsin Department of Public Instruction- IT Team
- Jeff Close, American Family
- Jennifer Thue, American Family
- Jeremy Kleifgen, Sentry Insurance
- Jerry Eastman, Wisconsin Cyber Threat Response Alliance
- Jim Dziak, AxCel Technology
- Joe Ruskey, Dependable Solutions
- Joe Zaccaria, Rockwell Automation
- John Lynn, TTM Technologies
- Kari Dahl, TTM Technologies
- Kent Newbury, Direct Supply
- Keri McConnell, Northwestern Mutual
- Kevin Scholz, Advanced Hires
- Kim Iverson, NEW IT Alliance
- Mao Lee, Rockwell Automation
- Melissa Straw, Wisconsin Department of Public Instruction- IT Team
- Mike Block, Infragard
- Molly Schuld, Northwestern Mutual
- Nicole Rice, Central Wisconsin IT Alliance
- Renee Kennedy, Webcrafters Inc.
- Ric Thonander, Secure Trust
- Rubie Gaththier, Sitecast
- Sarit Singhal, Superior Support Resources



Education Building Blocks

APPENDIX C– STATE TECHNOLOGY PARTNERS

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Employer Partners continued.

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- Caroline Hardin, TEALS
- Chad Kliefoth, Wisconsin Department of Public Instruction- Digital Literacy
- David Thomas, Wisconsin Department of Public Instruction- CTE– Business & IT
- Janice Mertes– Wisconsin Department of Public Instruction- Digital Literacy
- John Dobyms, UW– Oshkosh
- John Muraski, UW– Oshkosh
- Kurt Kiefer– Wisconsin Department of Public Instruction- Division for Libraries & Technology
- Mark Zachar, TEALS
- Mary Mooney, Wisconsin Department of Public Instruction- Math
- Patricia Hernandez, TAGOS Leadership Academy
- Sarah Kavanaugh, Wisconsin Technical College System- IT
- Tom Kaczmarek, Marquette University



Public Agency Partners.

- Amy Kaup, Government Information Processing of Wisconsin
- Amy Phillips, Wisconsin Department of Workforce Development– Youth Apprenticeship
- Jeff Keckhaver, Wisconsin Department of Workforce Development– Youth Apprenticeship
- Jeff Thomas, Public Service Commission of Wisconsin
- Marshall Behringer, Madison Chamber of Commerce
- Rebecca Deschane, Wisconsin Economic Development Cooperation
- Tom Bernd, Wisconsin Department of Administration

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